

4.5-1 INTRODUCTION

As discussed in Chapter 3, "Project Alternatives," the Preferred Alternative would involve construction of a new railroad bridge on a parallel alignment to the existing bridge, and removal of the existing bridge, including its piers. This chapter describes the construction effects of the Project and assesses the potential environmental impacts that might result from construction activities.

The construction activities described in this chapter are based on the current conceptual engineering design. While the construction activities ultimately used for the Project may vary depending on the final design developed, the potential for environmental impacts and types of mitigation measures described herein would likely be the same.

4.5-2 DESCRIPTION OF CONSTRUCTION ACTIVITIES

The Preferred Alternative would involve construction of a new bridge and approach tracks as well as demolition and removal of the existing bridge and its approach tracks. During the construction period, the existing bridge would continue to be used for freight trains until the new bridge is operational. Once the new bridge is in operation, the railroad tracks and other infrastructure on the old alignment would be removed as would the old bridge.

Construction would require approximately 27 months, with tree clearing activities beginning in late 2014 and construction completion by the end of 2017. This schedule assumes that construction would occur over the entire year, although there may be times when inclement winter weather requires temporary shutdowns, which could lengthen the construction schedule. It is anticipated that normal construction work hours would be 7 AM to 5 PM, Monday through Friday, with no work on Saturday and Sunday. However, some time-sensitive tasks might be performed outside those hours or on weekends. Construction may occur on both sides of the river at the same time or may alternate between the two sides.

The following describes the steps for construction of the Preferred Alternative.

4.5-2-1 Pre-Construction Activities

Prior to commencing construction, Norfolk Southern will obtain the applicable permits and approvals required by regulatory agencies. Chapter 4.1, "Process, Agency Coordination, and Public Participation," identifies the permits, approvals, and reviews that may be necessary for construction. Acquisition of land and/or temporary construction easements would also be completed before construction begins on those affected areas. As discussed in Chapter 2, "Project Context," of this DEIS, this includes land to be acquired from the New York State Office of Parks, Recreation and Historic Preservation (OPRHP) that is currently part of Letchworth State Park as well as some private property.

4.5-2-2 Establishment of Construction Zone

Prior to construction, the construction zone would be secured. On the west side of the river, this area would encompass Norfolk Southern's existing property and the additional property to be

acquired from the OPRHP, as well as temporary construction easement areas (see **Figure 4.5-1**).

As shown in the figures, the construction zone on the west side of the river includes a segment of Park Road as it passes beneath the existing bridge. The construction zone also includes a small parking area just south of the existing bridge (the Highbridge Parking Area) and the southern trailheads for the Mary Jemison Trail and the Gorge Trail. This segment of Park Road, the parking lot, and the two trailheads would be closed at the start of construction and remain closed for the duration of construction. In addition, although not needed for construction, OPRHP will close the segment of Park Road south of the construction zone between the Portageville Entrance and the construction zone (as well as the Portageville Entrance itself) and the segment of the road north of the construction zone between the construction zone and the Upper Middle/Falls turnoff.

On the east side of the river, the construction zone would encompass Norfolk Southern's existing property and additional property to be acquired for the Project (see **Figures 4.5-1 and 4.5-2**). This area includes a segment of the Genesee Valley Greenway Trail, which would remain open except for occasional shutdowns as needed (discussed later in this chapter).

Staging areas would be set up within the construction zone from which construction activities would be managed and where construction equipment would be stored as needed. Construction staging and material laydown areas would be located within the right-of-way owned by Norfolk Southern (including the new area to be acquired) and within temporary construction easements adjacent to the right-of-way. If necessary, the contractor may also seek other property for use as staging areas near the construction zone.

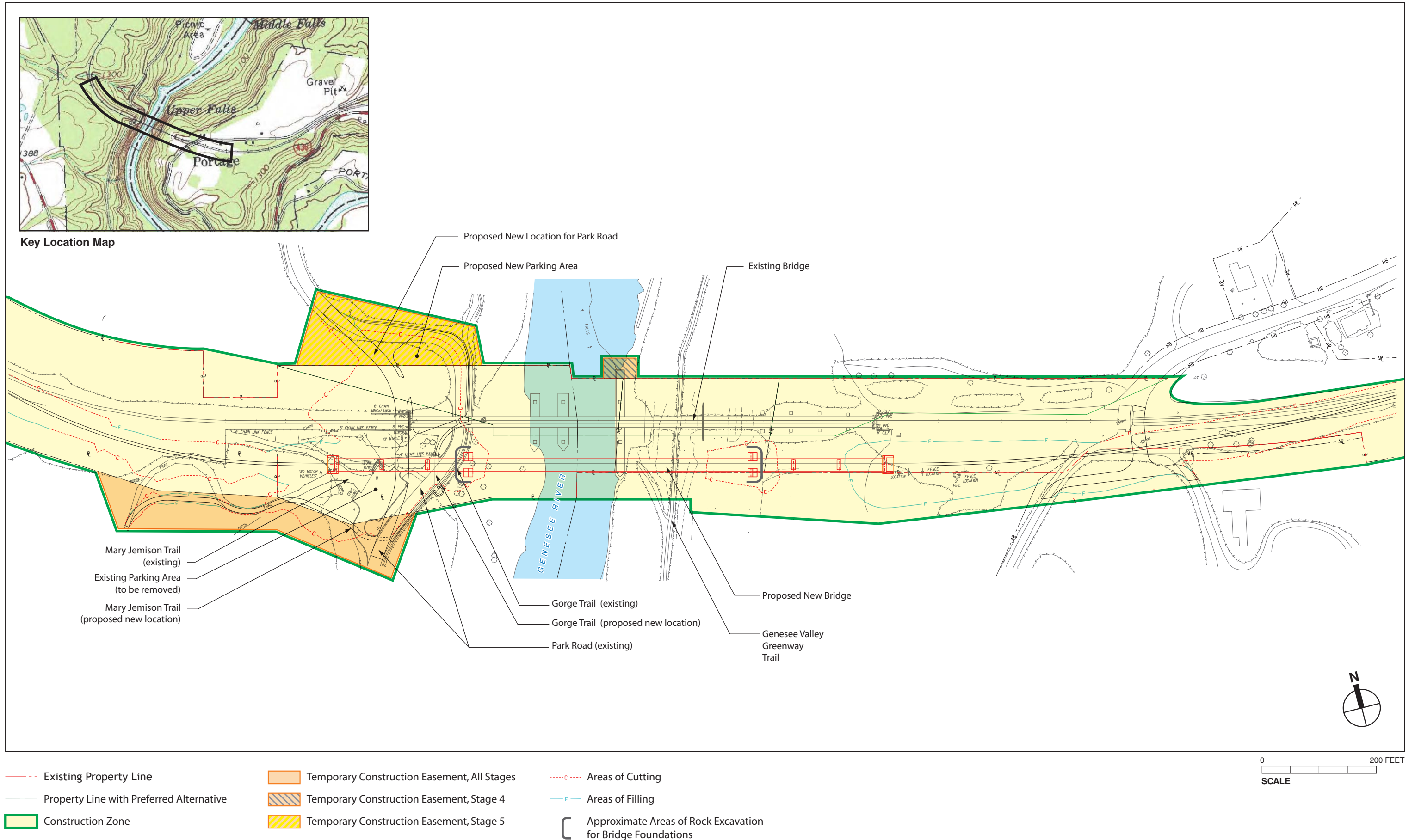
4.5-2-3 Stage 1: Rock Excavation for Bridge Foundation

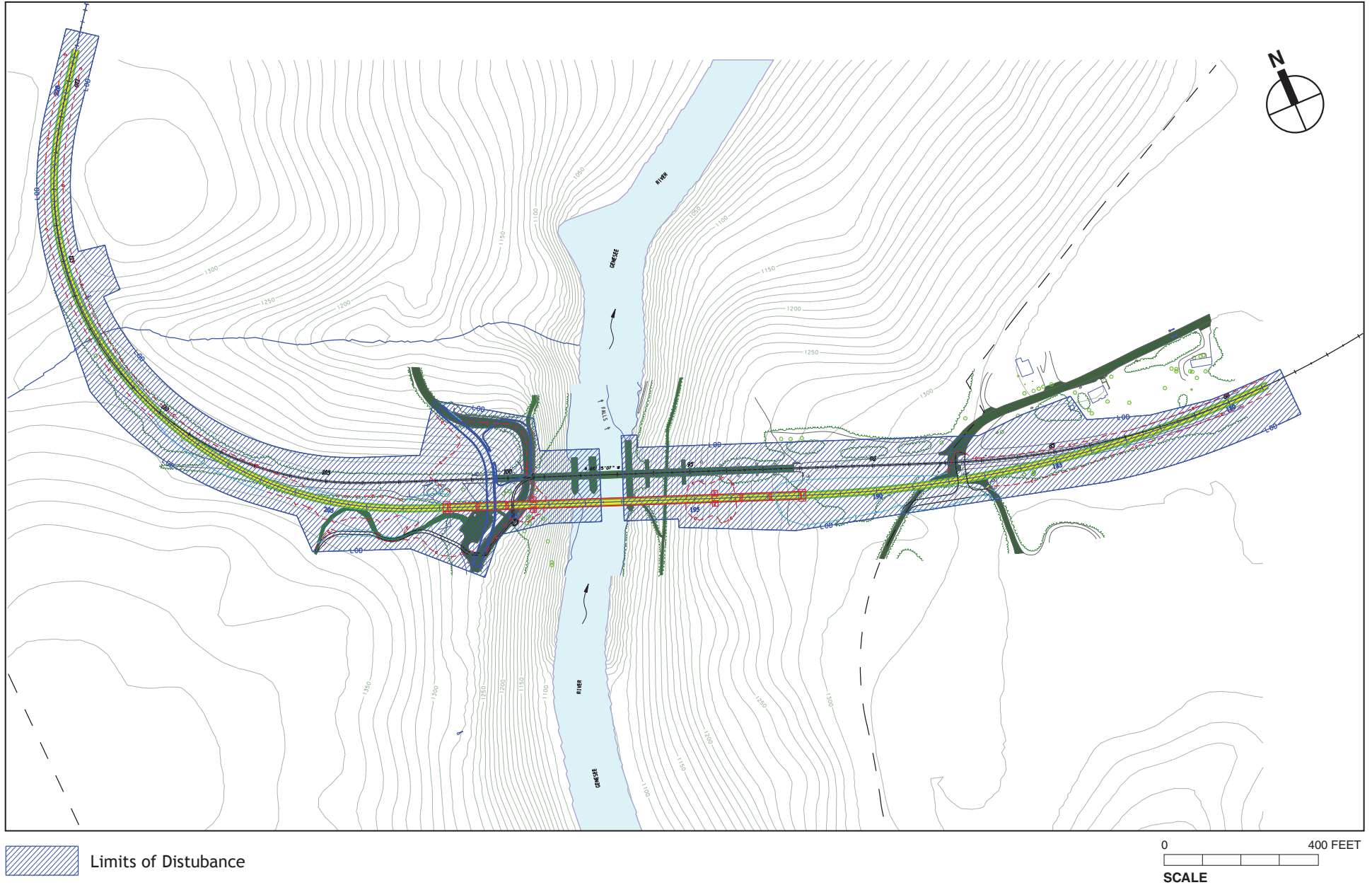
Excavation would occur on and at the top of the gorge wall on both sides of the river in the area where the new arch foundations are to be constructed. The foundations would be embedded approximately 40 to 80 feet into the rock at the top of the gorge wall on each side of the river, which would require cuts into the rock face (see **Figures 4.5-1 and 4.5-3**).

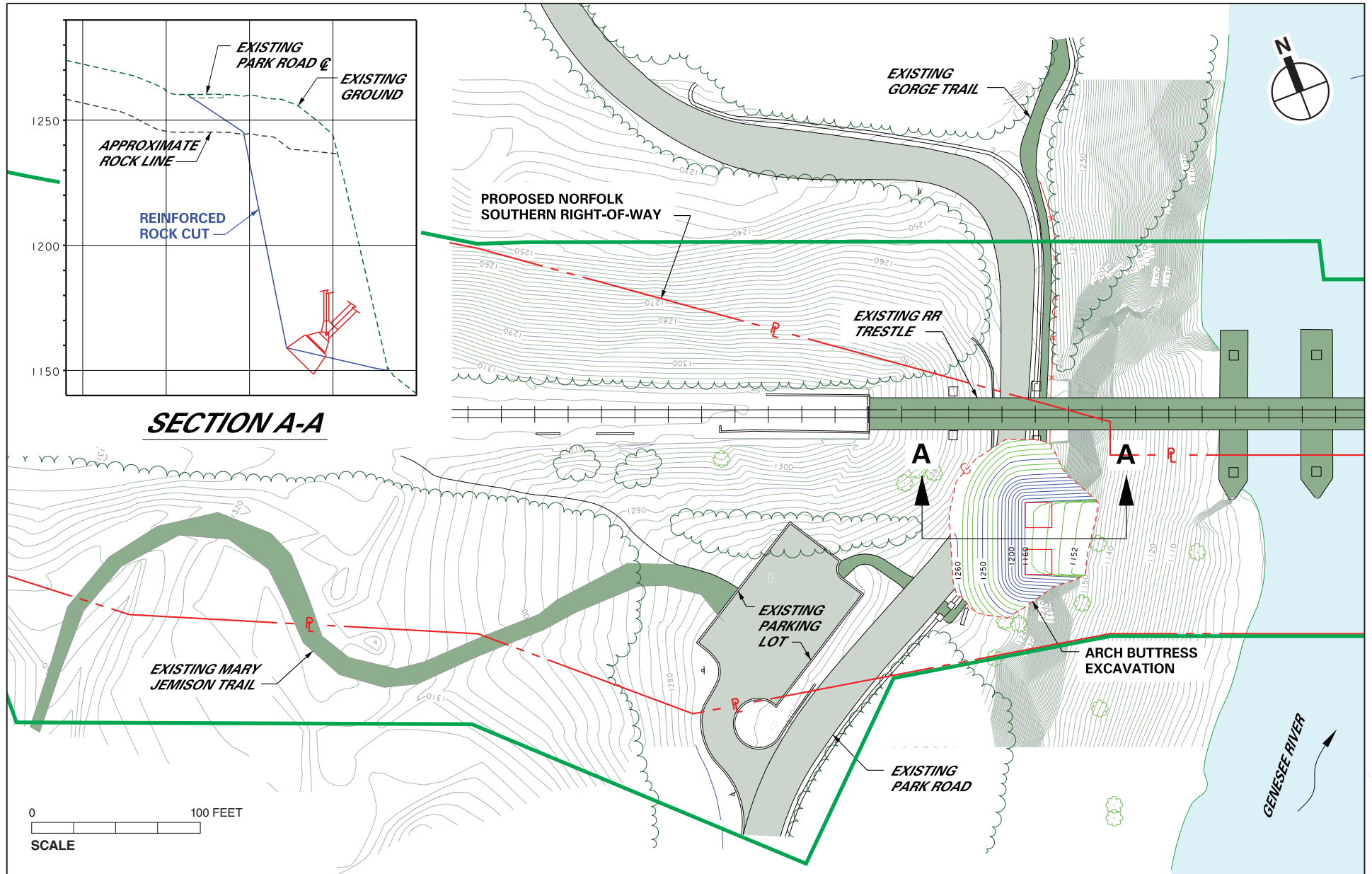
As part of the preliminary design process, a geotechnical investigation was performed for the Project. Geotechnical engineers used rappelling equipment to investigate the face of the gorge wall and determined that the rock near the face of the gorge is not capable of supporting the arch bridge foundation. The arch foundations must be founded in competent rock capable of resisting the large vertical reaction and horizontal thrust that are inherent to an arch bridge. Based on the findings from the geotechnical investigation, a conceptual level structural design for the arch structure that provided the overall arch geometry, the magnitude of the vertical and horizontal forces associated with the structure, and the location of the arch thrust blocks that transmit the forces into the supporting rock, it was determined that the arch buttresses must be founded farther into the gorge wall than at the face.

Norfolk Southern proposes to use controlled blasting to excavate the rock as required for the bridge's arch buttress foundations. The use of such controlled blasting would expedite the construction schedule in comparison to other excavation techniques, such as rock hammering, which could extend the duration of the rock excavation component of construction by four to six times longer than controlled blasting. Moreover, rock hammering results in higher overall construction noise levels, because it occurs over extended periods rather than in a single event as controlled blasting does. Rock hammering would involve traditional rock breaking methods, such as the use of a hoe ram, to cut down from the top of the gorge.

Controlled blasting may occur on one side of the river and then the other, or on both sides simultaneously using two separate crews. Controlled blasting would entail the following process:







Construction Zone

- Drilling small holes in the rock;
- Placing a small quantity of explosive in each hole;
- Attaching a detonation system;
- Covering the area with blasting mats, which are heavy mats that prevent rock from becoming airborne during blasting;
- Sounding a warning whistle;
- Detonating the controlled blast;
- Removing the blasting mats; and
- Excavating the blasted rock.

Each controlled blast would excavate a discrete area, after which the sequential process would begin again. The controlled blasts would be designed to minimize vibration, "air blast" effects, and airborne rock, so as to protect the gorge walls, river, and existing rail bridge. During blasting, no train traffic would traverse the bridge.

The construction contractor's contract documents would require the contractor to implement containment strategies, including, but not necessarily limited to, the use of blasting mats, to prevent rock and blasting materials from entering the river. The use of blasting mats would prevent most rock loosened during blasting from becoming airborne and entering the river during blasting operations. Even with the use of blasting mats, however, dust would be generated and some rock could fall downward from the blast area. If rock does enter the river as a result of blasting, the contract documents will require that the contractor assess the existing containment strategies to make any corrections necessary, and coordinate with appropriate agencies, assess appropriate removal strategies, and, if appropriate, remove the fallen rocks from the river.

During this stage of construction, excavated materials would have to be raised to the top of the gorge via crane, hoist, or conveyor. In addition, drilling equipment, explosives, blasting mats, and excavation equipment would have to be lowered to the blasting zone. Materials and equipment could potentially be hauled by truck or conveyor system across the river.

As detonations are being staged and executed, it may be necessary to restrict radio communications in proximity to the construction zone to prevent a premature detonation. Specific protocols for radio communications will be developed by the contractor in consultation with OPRHP.

Given the logistical difficulties in excavating the gorge face, it is currently anticipated that only one to two controlled blasts would occur per week. Depending on the number of such blasts each week and the volume excavated per blast, blasting may require approximately 4 to 8 months on the west side and 6 to 11 months on the east side.

Once the foundation area excavation is complete, drape netting (a metal mesh curtain) would be applied to the newly exposed rock face to stabilize the rock face and prevent rockfall.

It is anticipated that a temporary work trestle/causeway to the south of the existing bridge would be constructed for use during construction of the new bridge and then demolition of the existing bridge. The temporary work trestle/causeway would occupy approximately 0.046 acres over the river and be at an elevation of approximately 30 feet above the riverbed. On the east side of the river, the temporary work trestle would be placed on the existing east bridge pier. A temporary road would be constructed on the landward side of the east pier and would connect to the temporary work trestle at the east pier. On the west side of the river, a portion of the existing talus would be excavated for the placement of the western portion of the work trestle/causeway. Along this talus slope, a temporary pier in the riverbed and a retaining structure located on the south side of the temporary trestle/causeway would be constructed. All placement of fill for the

temporary access road would use conventional construction equipment (i.e., bulldozer, cranes, etc.).

4.5-2-4 Stage 1A: Clearing and Grading

While Stage 1 is under way, clearing and grading in the construction zone would also be occurring. Some trees and vegetation would be removed on both sides of the river where the new right-of-way is planned. Tree removal will occur only in the winter months (the period from October 31 to March 31). **Figure 4.5-4** shows the areas where clearing would be required.

After the area is cleared, the new right-of-way would be graded to allow construction of the approach tracks to the bridge at an appropriate elevation. This would most likely occur during Stage 1 or early in Stage 2. To the west and east of the approach spans, the track would be on embankments to bring the track to the same grade as the bridge, similar to the approach tracks to the existing bridge. Creating these embankments in the terrain west of the bridge would involve some excavation on the west side of the river. Additional area would also be cut to create an area for the new replacement parking area north of the tracks. On the east side of the river, cutting and filling would occur to create approach tracks at the appropriate elevation (see **Figure 4.5-1**).

Construction of the approach embankments would involve the use of granular fill materials that would be compacted using vibratory compactors.

4.5-2-5 Stage 2: Construction of New Bridge's Arch Structure

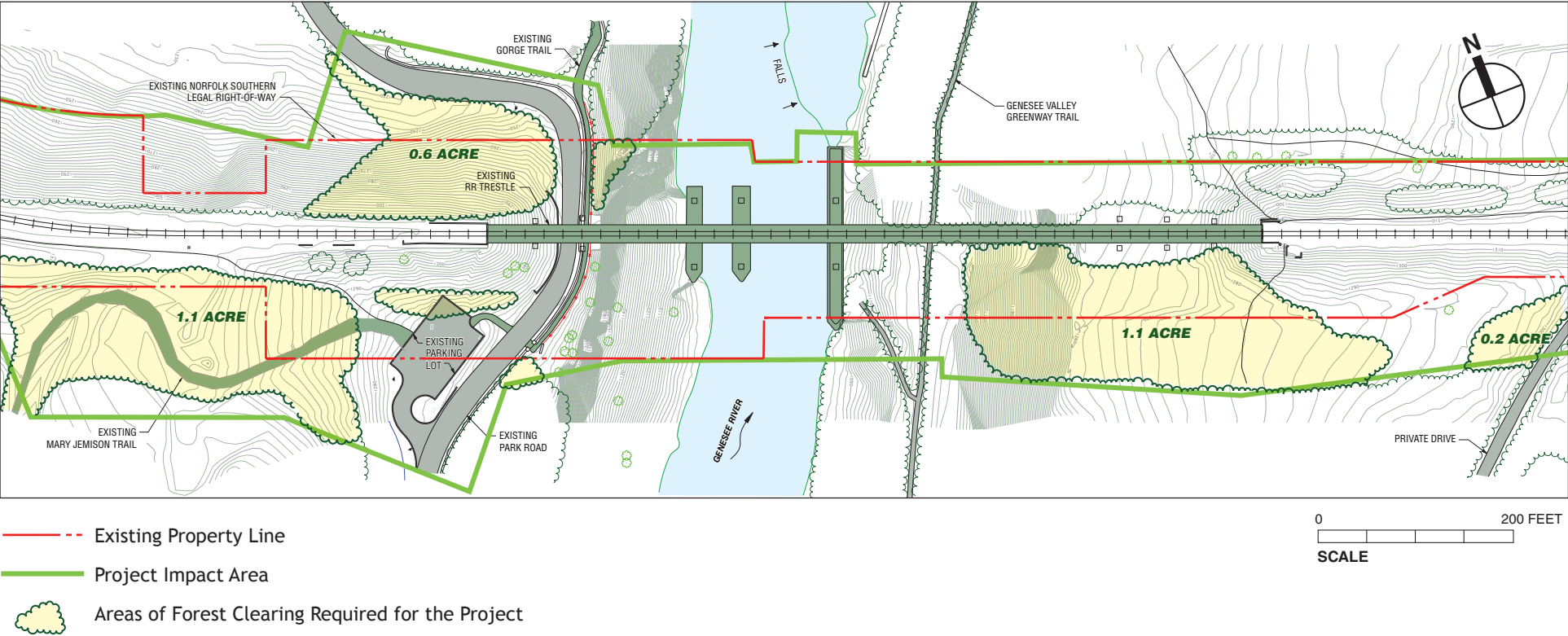
The second stage of construction would be erection of the new bridge's arch structure. This work would involve the following steps on each side of the river:

- Construction of the bridge foundations in the rock.
- Construction of the arch span extending from the foundation over the river.
- Construction of the piers and abutment that support the approach spans (i.e., the landside bridge spans at the top of the gorge).
- Placement of a deck on the bridge structure.

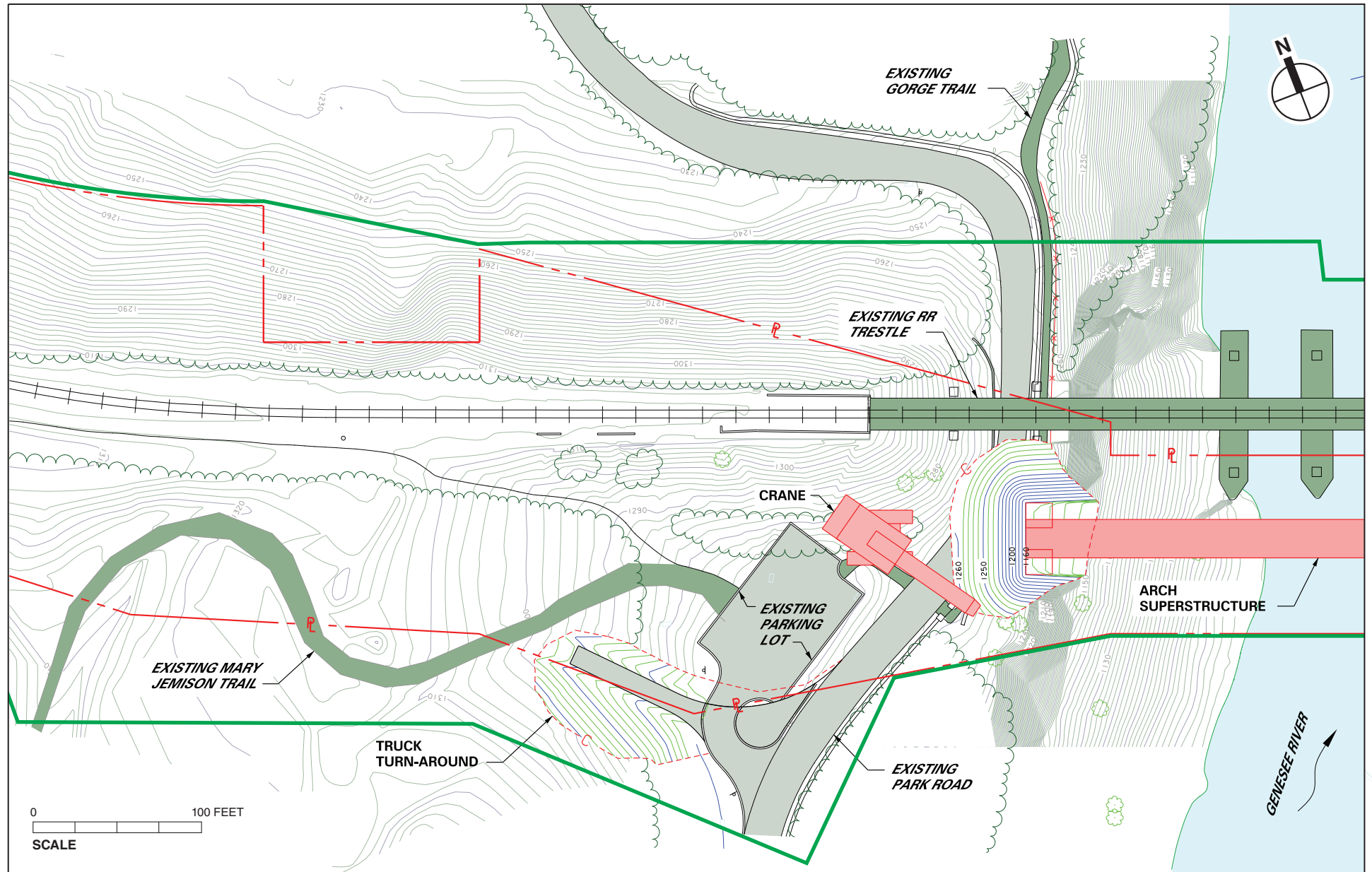
Construction of the new bridge would generally be accomplished using cranes located on either side of the gorge. The type of bridge proposed, a spandrel braced deck arch, does not require the use of any supports beneath the arch during construction, so no temporary supports in the river or gorge would be required. The steel arch of the new bridge would be keyed into the foundations in the bedrock at an elevation of approximately 80 feet above the normal water level of the Genesee River. Construction of the arch would be performed by cantilevering the spans from each side of the gorge using tiebacks and connecting each cantilever span at the midspan.

As shown in **Figure 4.5-5**, during Stage 2, a truck turnaround would be in place adjacent to the south side of the Highbridge Parking Area, and a crane would operate on the north side of the parking area. A crane would be similarly placed on the east side of the river. A Norfolk Southern watchman would be positioned at the construction site to limit crane operations when trains cross the existing bridge. The truck turnaround would ultimately become the new trailhead for the Mary Jemison Trail.

After excavation is complete (Stage 1), construction of the arch structure in Stage 2 would last approximately eight months.



Areas of Forest Clearing Required for the Project
Figure 4.5-4



Construction Zone

4.5-2-6 Stage 3: Construction of New Approach Spans and Track

On each side of the river, there would be approach bridge spans leading to the main arch span over the gorge. Both spans would be steel multi-girder superstructures supported on concrete piers. The number and span length of the approach spans will be determined during preliminary engineering. Currently, the bridge abutments are anticipated to be located about 240 feet to the west and east of the arch foundation, with two concrete piers supporting the spans between the abutments and the arch (see **Figure 3-6** in Chapter 3, “Project Alternatives,” for an illustration of the bridge approach spans). It is expected that approach span piers would have either spread footings or pile-supported footings, depending on the depth of overburden soil at the pier location. If these span piers are pile-supported, the piles would be drilled rather than driven into place, to reduce the noise levels associated with pile installation. The duration for pile drilling would be approximately two months on each side of the gorge. Overall, construction of the approach spans would last approximately 10 months on each side of the gorge.

Once construction of the new bridge and approaches are complete, ballast and trackwork would be placed on the new bridge and its approaches. On each side of the gorge, approximately 1,200 linear feet of new track would be laid. The tie-in of the realigned track to the Southern Tier route would require temporary closures, and potentially the rerouting of freight trains during the short time required to make this connection. This step would take approximately one month.

Figure 4.5-6 shows the area affected during Stage 3.

After the new bridge and realigned track have been constructed, train traffic would be diverted from the existing bridge to the new bridge.

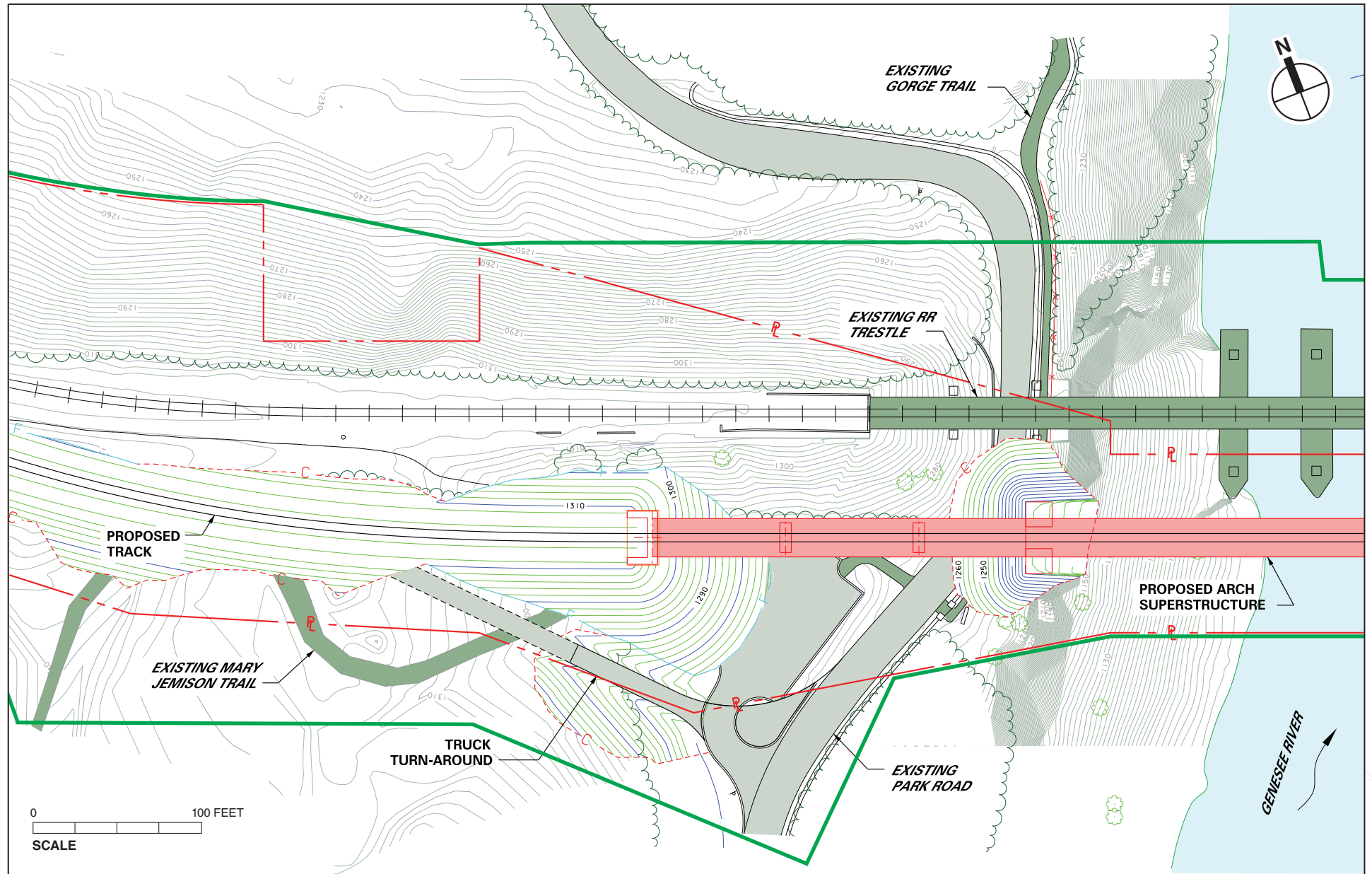
4.5-2-7 Stage 4: Removal of Existing Bridge

Once train traffic is diverted, the existing bridge and track approaches would be removed. Demolition of the existing bridge may be conducted from the temporary work trestle/causeway, described above. A crane positioned on the existing bridge deck may be used to remove the spans on either side of a bridge tower, after which the tower would be removed. **Figures 4.5-7A and 4.5-7B** illustrate a possible sequence for demolition of the bridge, showing removal of spans followed by removal of towers. This removal would continue until the entire bridge is demolished. No work in the water is anticipated for demolition of the bridge's steel superstructure. Materials would be taken off-site. The removal of the existing bridge superstructure would last approximately two months.

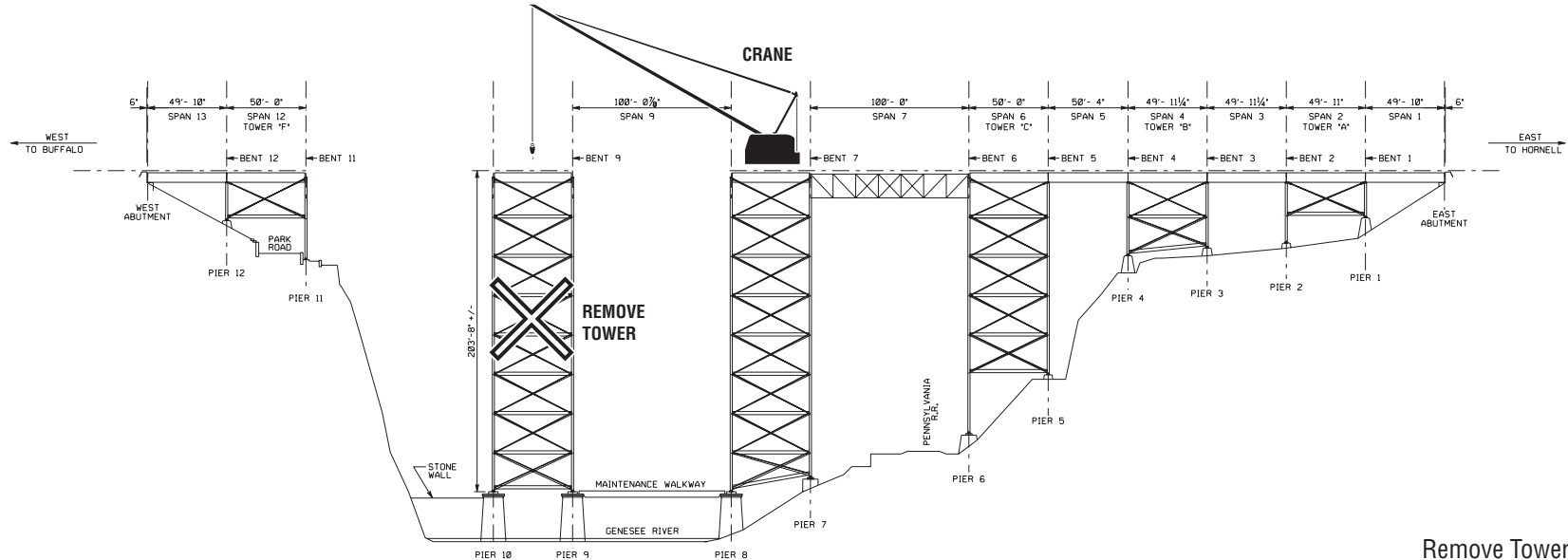
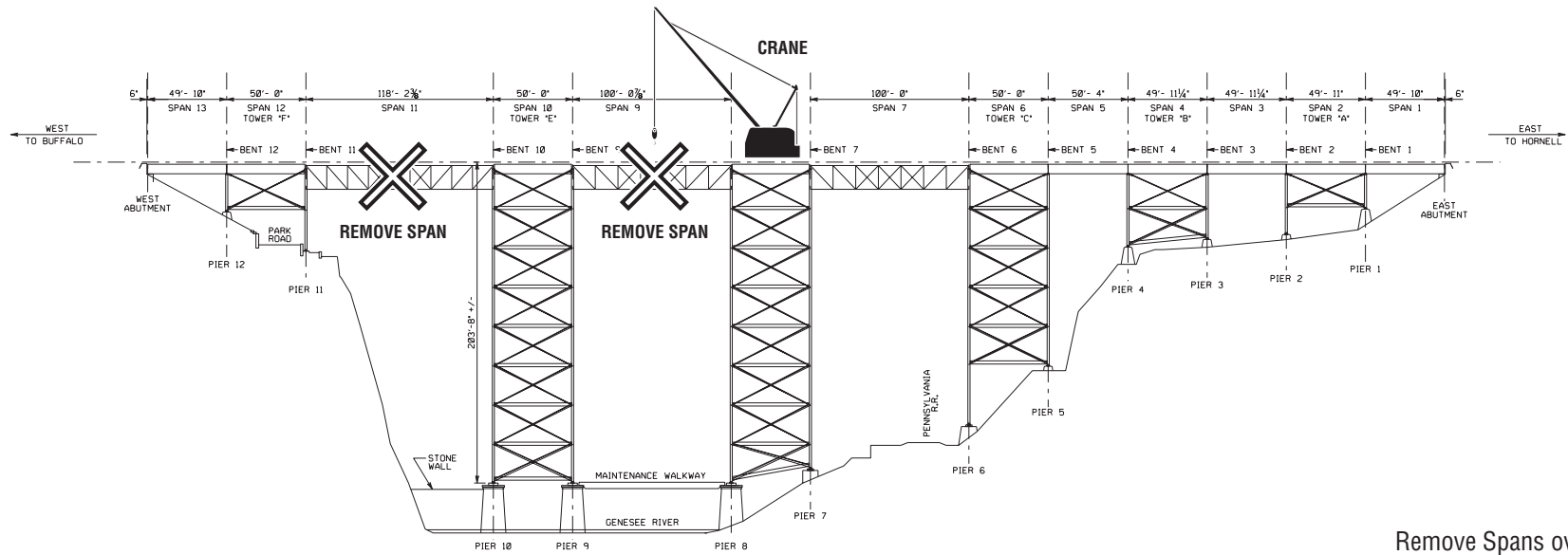
4.5-2-8 Stage 4A: Removal of Existing Bridge Piers in River

Removal of the existing concrete bridge piers from the Genesee River would also be accomplished via cranes working from the existing bridge as it is being demolished. Once the spans and bridge towers are removed from the river, workers at the base of the bridge in the gorge would remove the piers. The piers would be cut flush with the bedrock in the riverbed. Workers would break up the concrete and stone piers, using conventional tracked construction equipment (e.g., bulldozers, excavators). Debris would be handled by an excavator with a demolition bucket. Materials would be removed by the crane on the existing bridge (see **Figure 4.5-8**) or hauled away by truck or conveyor system on a trestle/causeway. A cofferdam or turbidity curtains would be placed around the piers while they are being removed to minimize disturbance to the river.

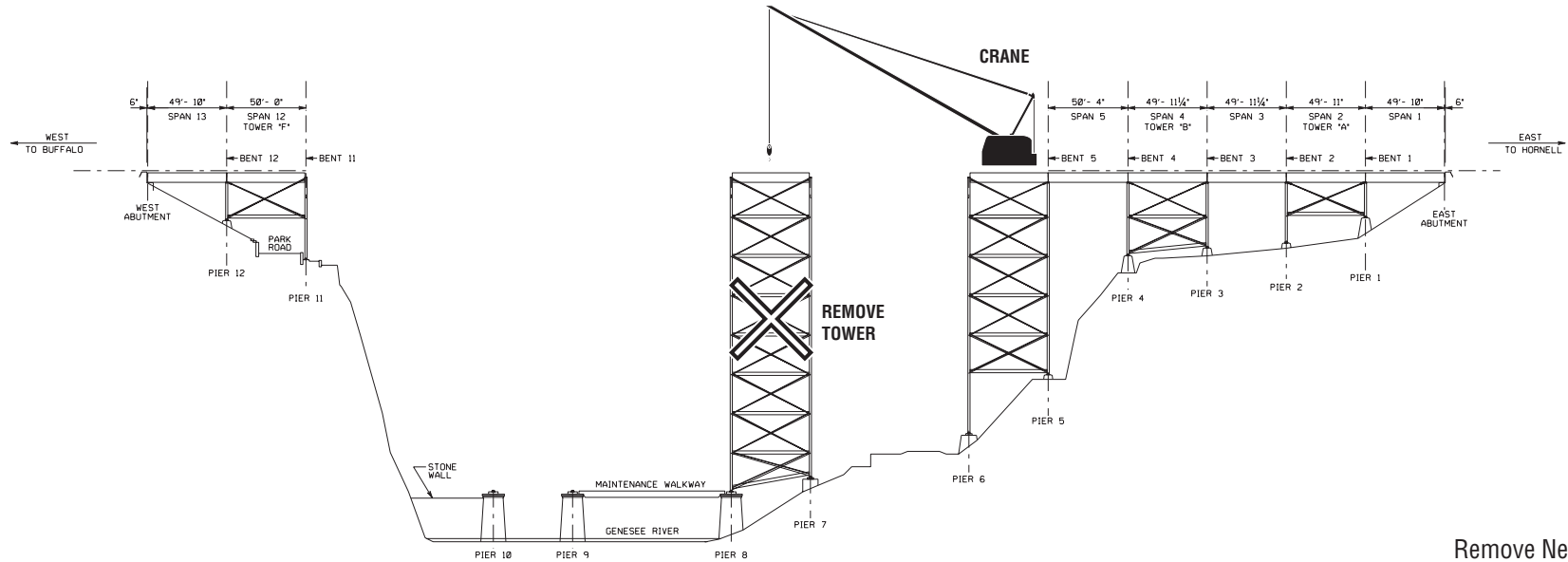
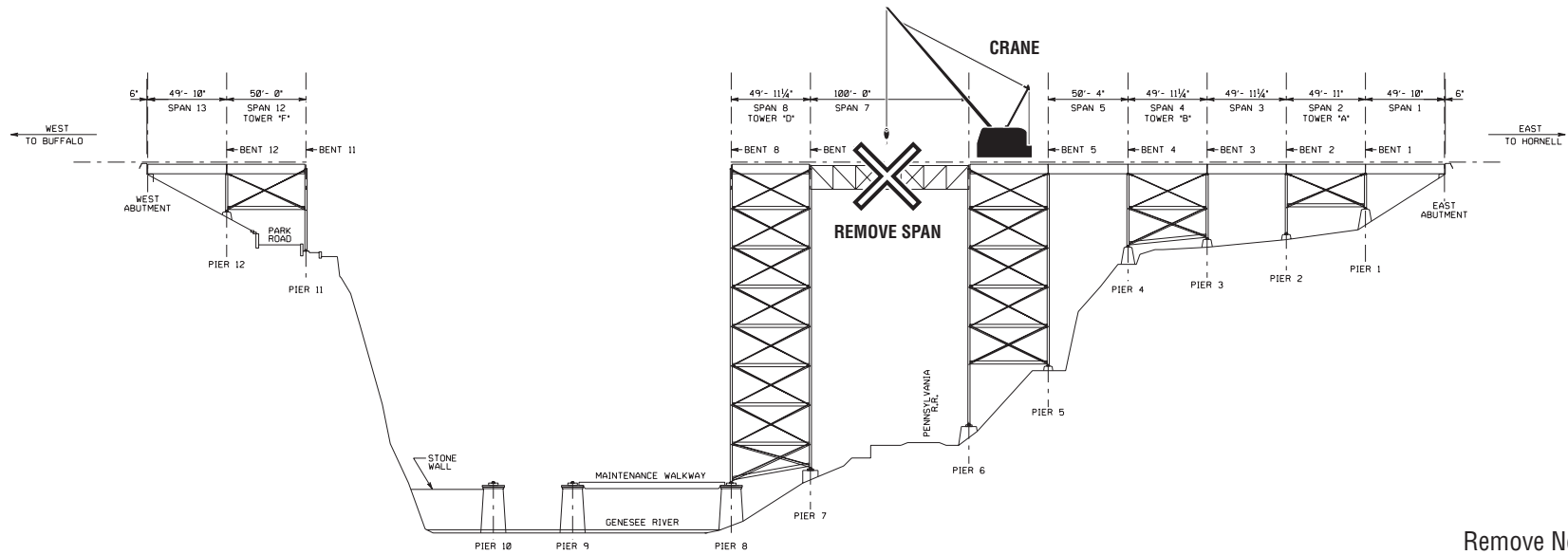
To expedite removal of the middle pier, if permitted, the contractor may elect to design and construct a temporary rock causeway in the river to move materials from the middle pier to the river's edge, where it could be hoisted to the top of the gorge. This would allow work to be

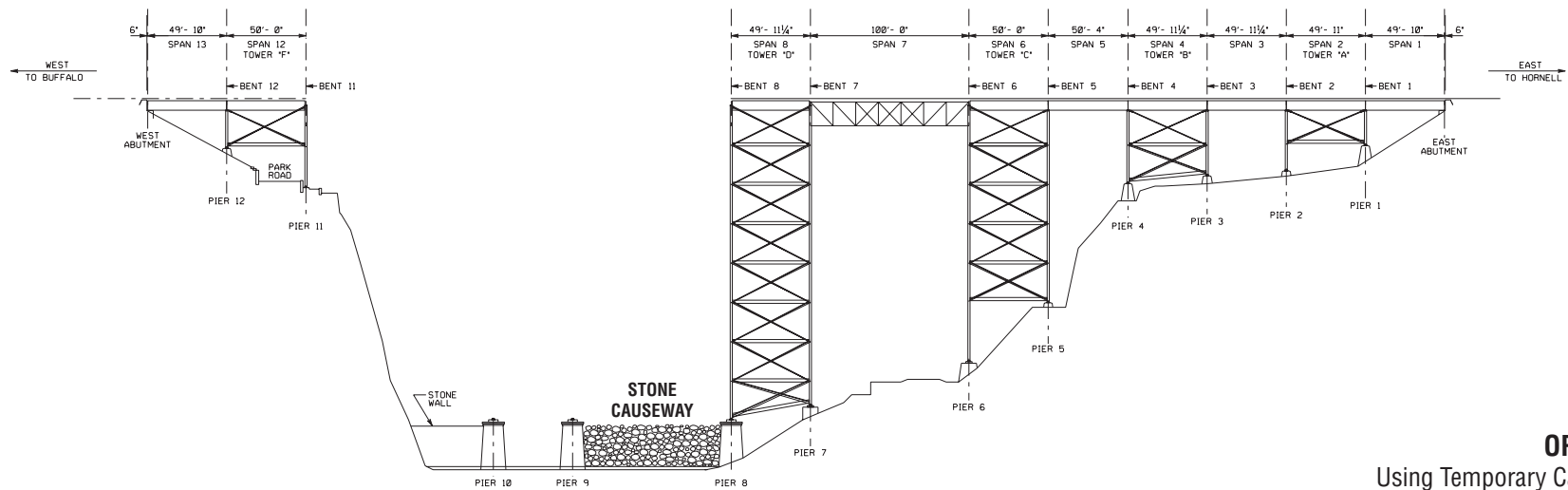
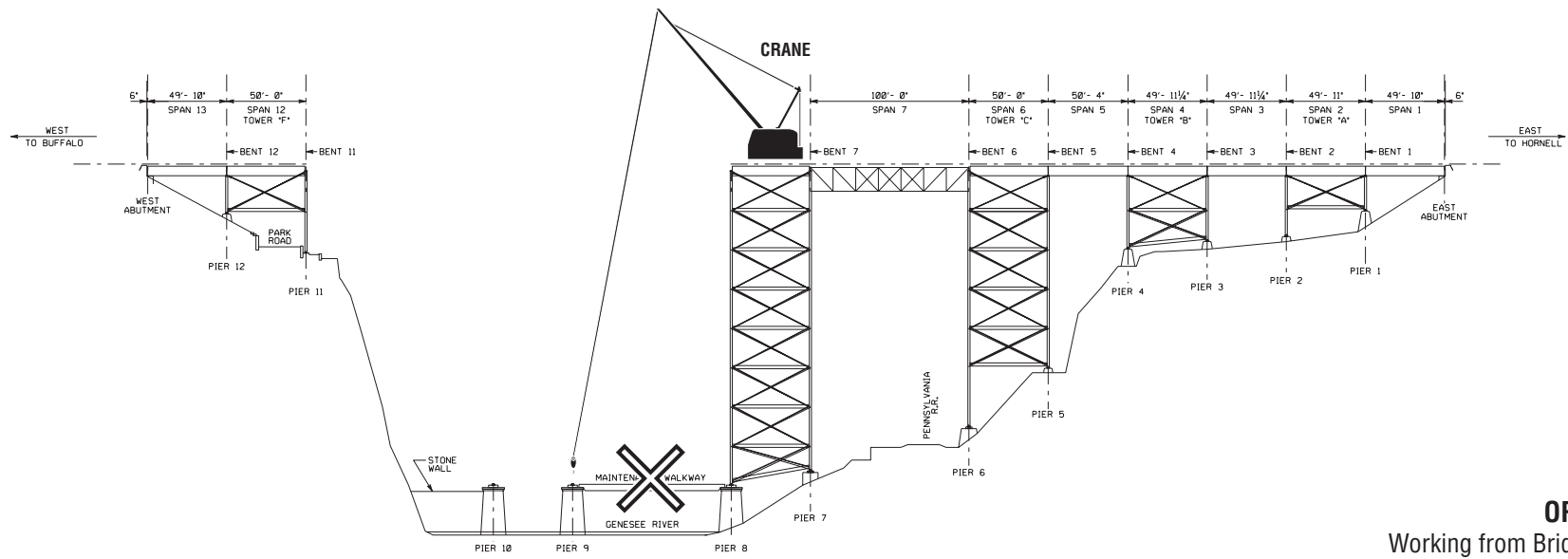


Construction Zone



Demolition of Existing Bridge, Potential Sequencing
Figure 4.5-7A





conducted from the causeway instead of, or in addition to, from above via crane (see **Figure 4.5-8**).

Removal of piers from the water would last three months (in addition to the time for removal of the existing bridge noted above).

4.5-2-9 Stage 5: Construction of Relocated Park Road, Parking Lot, and Trailheads

After the existing bridge has been removed, the relocated Park Road, new parking area north of the bridge, and new trailheads for the Mary Jemison and Gorge Trails would be constructed and reopened to the public. Since the pre-construction location of Park Road would be occupied by the bridge foundations, the road would be shifted westward from its previous location.

During this final stage, an additional construction zone would be required in the area where the new parking lot would be created (see **Figure 4.5-1**). Construction of the new road and parking area would involve grading of these areas, which would occur during this stage.

In addition, once construction is complete, the segment of Park Road from the Portageville Entrance to the construction site would be repaired as necessary before the road is reopened to the public. Similarly, Portageville Road would also be repaired as necessary after construction is complete on the east side of the river. It is anticipated that a survey of the roads' condition would be taken prior to construction, in coordination with park representatives (for Park Road) and local government officials (for Portageville Road), and on the basis of this survey, once construction is complete, if any damage to the road has occurred, the contractor will either repair, have repaired, or fund the repair of the road to its pre-construction condition, in coordination with park representatives and the local government.

4.5-2-10 Stage 6: Restoration of Disturbed Park Areas

Once construction of the bridge and realigned right-of-way is complete, the disturbed park areas would be restored. This would include landscaping work and tree replanting in coordination with OPRHP.

4.5-2-11 Excavation and Fill

The number of trucks associated with excavation of earth and rock and delivery of fill would depend on the means and methods ultimately selected by the contractor. At this time, it is anticipated that most if not all of the excavated rock from the arch buttress foundation excavation may be suitable for reuse at the Project site as embankment material for the new approaches. However, materials would need to be stockpiled after excavation since excavation would occur prior to construction of embankments; in addition, earth and rock may need to be moved from the excavation zone on the west side of the river to the excavation zone on the east side. Also, if materials that are unsuitable for reuse are encountered, these would need to be hauled away and structural backfill may need to be delivered. The potential total and net number of truck trips that may be required in connection with the excavation and filling is shown in **Table 4.5-1** below.

As shown in the table, the total number of trucks during the approximately 9- to 12-month excavation phase would be approximately 565 (445 on the west side of the river and 120 on the east side). Assuming a 9-month construction schedule, this is equivalent to 63 trucks per month, or 3 per day. During construction of the new embankments, there would be a total of approximately 755 trucks moving earth at the Project site, equivalent to 250 per month or 13 per day.

Table 4.5-1
Potential Excavation and Fill Volumes (cubic yards)
and Associated Truck Trips

Construction Area	West Approach		East Approach		Total	
	Volume	Trucks	Volume	Trucks	Volume	Trucks
Railroad Approaches						
Excavated material (9- to 12-month period)	4,000	445	1,100	120	5,100	565
Fill material (3-month period)	2,700	300	4,100	455	6,800	755
<i>Total (if no excavated materials are used for fill)</i>	<i>6,700</i>	<i>745</i>	<i>5,200</i>	<i>565</i>	<i>11,900</i>	<i>1,320</i>
<i>Net (if all excavated materials are used for fill)</i>	<i>1,300</i>	<i>145</i>	<i>3,000</i>	<i>335</i>	<i>1,700</i>	<i>190</i>
Relocation of Park Road						
Excavated material					32,900	3,655
Fill material					400	45
<i>Net</i>					<i>32,500</i>	<i>3,610</i>
Notes: Truck trips assume use of standard over-the-road 10-wheel rear-dump trucks with average capacity of 9 cubic yards.						

After the new railroad bridge is in service, the realignment of Park Road would require removal of a greater volume of materials—predominantly the hill and former railroad embankment in the relocation area. The potential net number of truck trips that may be required in connection with earthmoving associated with road realignment is shown in **Table 4.5-1**. For the roadway realignment, it can reasonably be assumed that all required fill material can be provided from the excavated material at the Project site.

4.5-2-12 Materials Delivery and Site Access

Materials delivery and removal would generally be by trucks that would reach the construction zone from existing roadways; rail, ties, and ballast may be delivered by trains operating on the Southern Tier route. Trucks would access the construction zone on the west side of the river via Park Road (using the Portageville Entrance); they would access the construction zone on the east side of the river via Portageville Road. As noted above, Park Road and Portageville Road would be repaired as needed once construction is complete.

The number of delivery trucks each day would vary, depending on the work occurring. On average, an estimated five trucks per day might arrive at and depart from the construction site. This might include oversize vehicles, as needed to deliver materials to the construction site. The busiest period in terms of truck activity is likely to be the excavation phase during the roadway realignment. Assuming the use of a 3.5 cubic yard crawler hydraulic hoe that can excavate 280 cubic yards per hour, this would correspond to 31 trucks per hour, if enough trucks are available to achieve this pace. This period of construction would last approximately two weeks at this rate of excavation. Truck cycles for other periodic material-intensive operations, such as rock blast material removal, stone/ballast placement, and concrete operations, would be at a lesser frequency. For the majority of the construction period for the Project, it is estimated that five or fewer heavy truck deliveries to the site would occur each day.

The number of construction workers at the site would also vary depending on the work that is occurring. On average, an estimated 20 workers might be on the site per day. Construction workers would be expected to arrive by private automobile with parking located in the construction zone.

4.5-3 EFFECTS ASSESSMENT

4.5-3-1 Transportation Conditions

Delivery vehicles and construction workers would travel to the construction sites via local roadways. Access to the construction zone on the east side of the river would be via Portageville Road from Route 436. Access to the construction zone on the west side of the river would be via Park Road using the Portageville Entrance to Letchworth State Park (also from Route 436/19A). Trucks and workers' vehicles arriving at and departing from the construction zones may pass through the Village of Portageville. They may also pass through the Village of Nunda, if they are bound to or from I-390. Given the relatively small number of trucks and construction workers each day, the increased traffic would not result in impacts on local roadways.

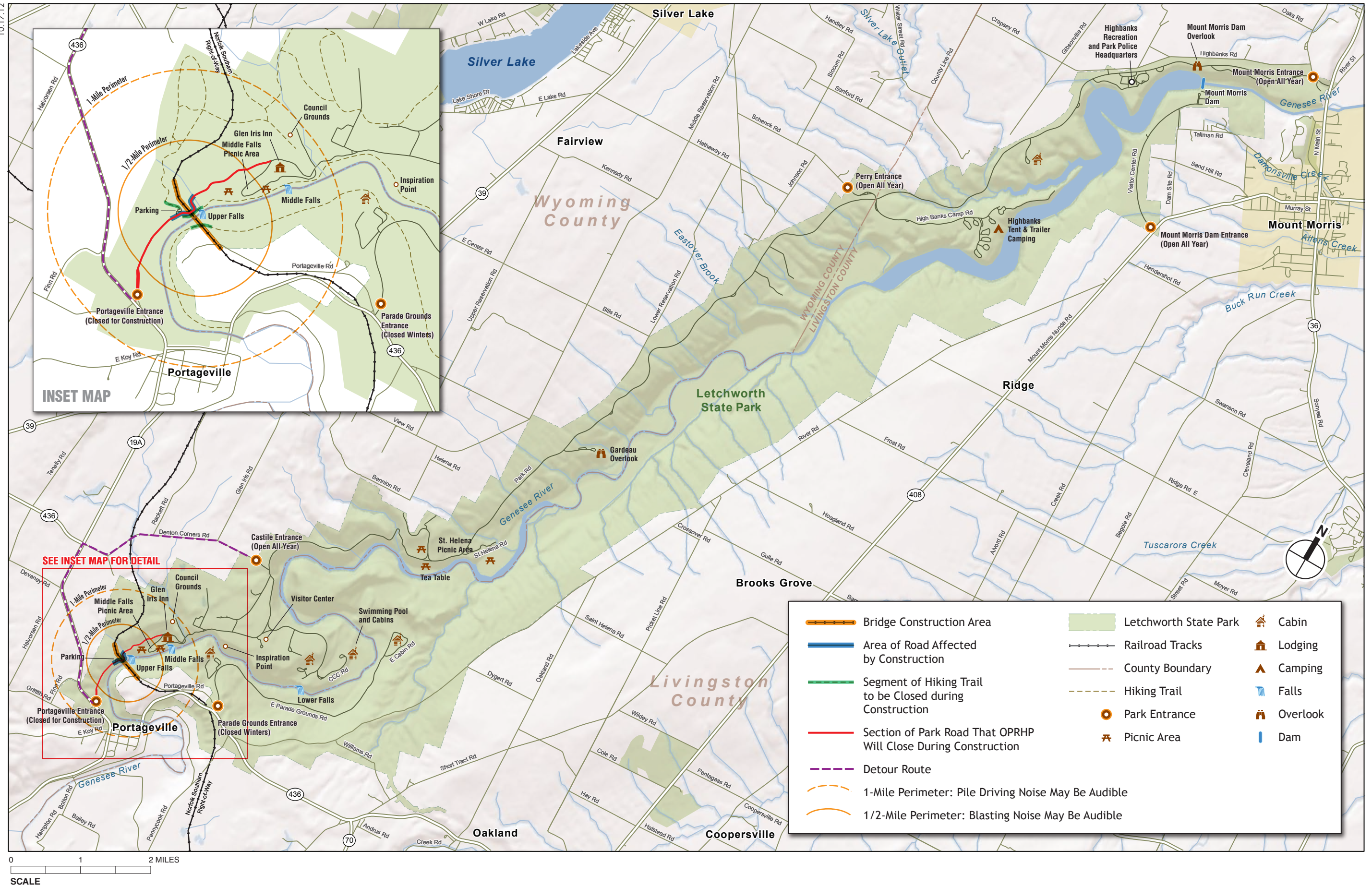
Park Road runs north-south for the length of Letchworth State Park, from the Portageville Entrance on the south to the Mount Morris Entrance on the north, providing access to all of the park areas on the west side of the Genesee River. During the winter, most of Park Road is closed and remains unplowed, which allows its use for winter recreational activities. During winter months, the Portageville Entrance is closed. The other three park entrances are open year-round, but provide access only to short segments of Park Road during winter months, when the rest of the road is closed. In the winter, Park Road is open between the Mt. Morris Entrance and Perry Entrance, and from the Castile Entrance to Glen Iris Inn and other recreational features near the Middle Falls. South of Middle Falls, including in the area alongside the Portageville Bridge, Park Road is closed in the winter and serves as part of a designated snowmobile trail.

Directing vehicles and workers to the western construction site by the Portageville Entrance would limit the use of Park Road by construction traffic and isolate the construction traffic from park-related traffic and activities. Given the number of workers anticipated to be on site and the nature of the construction proposed, this localized increase in vehicles would not be expected to result in impacts to traffic conditions on local roadways. As noted above, at the end of the construction period, Norfolk Southern would repair Portageville Road and the segment of Park Road from the Portageville Entrance to the construction site to address any damage to the road that may have occurred from its use by construction vehicles.

During construction, a total of approximately 600 linear feet of Park Road within the construction zone would be closed to the public for the duration of construction, estimated at approximately 27 months. Another 120 feet of the roadway would be within a short-term construction area (in use for less than six months). As part of the construction of the Project, the segment of Park Road within the construction zone would be permanently shifted westward from its current location.

Closure of Park Road at the construction site would mean that visitors to the park would not be able to access the area north of the construction site using the Portageville Entrance. Because the short segment of road from the Portageville Entrance to the construction site (approximately ½ mile) does not provide access to any activities in Letchworth State Park south of the bridge construction area, OPRHP has decided that it will close this ½-mile long roadway segment and the Portageville Entrance itself to vehicular traffic during construction. Similarly, there are no destination points and no existing adequate places to turn around between the construction closure and the Upper/Middle Falls Area turn-off on Park Road, north of the Project site. Consequently, OPRHP has decided that it will close this roadway segment for the duration of construction. **Figure 4.5-9** illustrates the segments of road that would be closed during construction.

The only park features located between the Portageville Entrance and the Upper/Middle Falls Area turn-off (approximately 0.5 miles to the north) are the southern trailheads for the Mary



Jemison Trail and Gorge Trail, but both of these trailheads would be within the construction zone and closed during construction. In addition, in the winter when the Portageville Entrance is closed to vehicles, the segment of Park Road between that entrance and the Highbridge Parking Area/Mary Jemison Trail serves as part of a snowmobile trail.

The rest of Park Road (i.e., the area north of the Upper/Middle Falls Area turn-off) would be unaffected by the Project's construction. This section of the road would remain accessible via the other park entrances (the Castile Entrance, Perry Entrance, and Mt. Morris Entrance). Visitors to the park who come from the south would have to detour around the Portageville Entrance to the Castile Entrance. For visitors, employees, and deliveries to the southern end of the park, the detour from the Portageville Entrance to the Castile Entrance would add approximately 2 to 5 miles to the trip, depending on the destination in the park, as shown in **Table 4.5-2** below. For vehicles bound for the northern part of the park that would have used the Portageville Entrance, the detour would add 1 mile to the trip.

The Portageville Entrance has two lanes for entering traffic and two lanes for exiting traffic. The Castile Entrance from Denton Corners Road provides a year-round entrance to the southern part of the park via Park Road and has one entering lane and one exiting lane. Farther north, Park Road is also accessible year-round via the Perry Entrance and Mt. Morris Entrance.

According to OPRHP, 25 percent of the visitors to Letchworth State Park enter at the Portageville Entrance (with an annual average of 650,000 visitors to the park, that is equivalent to 162,500 visitors entering at the Portageville Entrance). During construction, alternative access to Letchworth State Park for park visitors would be available via the other three park entrances, with the closest access for the southern end of the park at the Castile Entrance. To avoid congestion on busy days at the Castile Entrance because of the loss of entrance capacity at the Portageville Entrance during construction, Norfolk Southern will fund construction of a replacement entrance booth at the Castile Entrance with a two-lane entrance booth to provide greater capacity.

During construction, the Highbridge Parking Area would also be closed. This small lot can accommodate approximately 18 cars. It serves park visitors using the Mary Jemison Trail or Gorge Trail, which both have trailheads from the parking lot. Since these trailheads would also be closed during construction (see **Figure 4.5-9**), the temporary loss of the parking spaces would not be an adverse impact.

Table 4.5-2

Additional Distances Resulting from Detour to Castile Entrance

Destination	Distance (Miles) from Portageville Entrance via Park Road	Distance (Miles) Via Detour, from Portageville Entrance to Castile Entrance to Park Road	Additional Miles Added by Detour (Difference between Routes)
Turnoff for Middle Falls Picnic Area	1.2	5.9	4.7
Glen Iris Inn / Museum	1.3	5.7	4.4
Turnoff for Park Maintenance Area near Middle Falls	1.7	5.3	3.6
Inspiration Point/Stone House	1.9	5.2	3.3
Park Visitor Center	2.3	4.8	2.5
Turnoff for Lower Falls/Swimming Pool/ Cabins	2.4	4.7	2.3
Other Points North of Castile Entrance	3.0	4.0	1.0

Source: Distances based on Google maps, distance measurement tool.

4.5-3-2 Social Conditions

Because of the construction site's location in an area surrounded primarily by parkland, disruption to residences and businesses would be limited. However, residents of the houses at the western end of Portageville Road, close to the rail right-of-way, would experience construction noise associated with the Project on the east side of the bridge. In addition, construction vehicles arriving at and departing from the east side construction zone would use Portageville Road and therefore would pass these residences.

As noted above, trucks and workers' vehicles arriving at and departing from the western construction zone may pass through the Village of Portageville and/or the Village of Nunda. Given the relatively small number of trucks and other vehicles each day, the increased traffic would not adversely affect the character of either village.

For the construction period when the Portageville Entrance is closed to the public, vehicles arriving at and departing from the southern end of the park would use the Castile Entrance. As discussed above, this is a detour of approximately 2 to 5 miles, depending on the destination within the park. This route is currently used in the winter, when the Portageville Entrance is closed. The detour would require longer trips for emergency response vehicles, such as fire trucks from the Nunda Fire Department and ambulance service and supporting fire protection service from Pike. Emergency services arriving from Castile would not have longer trips.

4.5-3-3 Economic Conditions

Construction activities would generate jobs, both directly (construction workers and workers who produce materials used in construction) and indirectly (associated with goods and services purchased by workers), resulting in economic benefits to the local and regional economy. For instance, construction workers would likely spend some of their income on local goods and services, such as food and drink.

For the construction period when the Portageville Entrance is closed to the public, vehicles arriving at and departing from the southern end of the park would use the Castile Entrance. This would increase the distance to businesses located within the southern end of the park (i.e., the Glen Iris Inn and other lodging, the William Pryor Letchworth Museum, and the balloon launching site at Middle Falls picnic area used by Balloons Over Letchworth) for some visitors, patrons, and employees. As shown in **Table 4.5-2** above, the detour from the Portageville Entrance to the Castile Entrance would add approximately 2 to 5 miles to the trip, depending on the destination in the park. This would make access to these destinations slightly less convenient for those coming from the south and east, including visitors, employees, and deliveries. However, given the attractiveness of these businesses as destinations for visitors who travel from outside the region to reach them, the detour is not expected to result in notable declines in patronage to the businesses that operate in the park or adverse impacts on the businesses.

During construction, hot air balloons would have to maintain a safe distance between the construction site and equipment and hot air balloons, just as today they must maintain a safe distance above the rail bridge. Cranes extending over the gorge at a height of more than 200 feet above mean high water may require lighting in accordance with Federal Aviation Administration (FAA) regulations. At minimum, coordination with the FAA would be required prior to initiating construction activities.

4.5-3-4 Environmental Conditions*Wetlands*

As discussed in Chapter 4.4.1, "Wetlands," the Project would require the placement of fill in 0.03 acres of a 0.09-acre wetland (Wetland A) for the new bridge approaches and associated embankment and drainage ditch, as well as the relocation of a portion of the Mary Jemison Trail and associated drainage ditch. Fill placement in Wetland A within the railroad embankment would consist of shot (blasted) rock and clean fill material placed at a slope with a 2:1 (horizontal: vertical) ratio. The embankment within the wetland would have an average 3-foot depth with a total fill volume of 140 cubic yards. In the ditch areas, turf mats would be installed on top of the rock fill.

Protection measures will be employed to limit encroachment into the remaining 0.06-acre wetland area during construction. These will include the use of erosion and sediment control measures to protect the water quality of the wetland. Exclusion fencing will also be installed around the portion of the remaining 0.06-acre wetland that would be within the area of disturbance to keep machinery and foot traffic out of the wetland during construction. Furthermore, as discussed in Chapter 4.4.1, "Wetlands," restoration of disturbed areas within the Project limits with native plant species will be conducted in coordination with OPRHP and the New York State Department of Environmental Conservation (NYSDEC). It is anticipated that the construction in this wetland would require a U.S. Army Corps of Engineers (USACE) permit under the Nationwide Permit Program. All construction activities will be conducted as per the requirements of the USACE permit. These measures would minimize the adverse effects related to construction of the Project on wetlands within the vicinity of the Project site.

Surface Waterbodies and Watercourses

As noted above, as an independent activity from the Project, modifications will be made to the railroad right-of-way to assist drainage of Stream B under the railroad bed in the western portion of the Project site. Construction activities for the new bridge under the Preferred Alternative would occur outside of the stream bed and banks of the Genesee River. No additional modifications would be required to Stream B or its drainage culvert. During construction activities, disturbance to surface soils would result in the potential for erosion and sediment loading into surface waters, including the Genesee River and Stream B. Disturbance activities may include, but may not be limited to, excavation and stockpiling of soils, installation of retaining walls, blasting, and removal of railroad ballast.

Installation of the temporary work trestle/causeway used for construction of the new bridge and demolition of the old bridge would require authorization from the USACE under Section 10 and Section 404 of the Clean Water Act, including related Section 401 water quality certification from NYSDEC, and is anticipated to meet the requirements for authorization pursuant to a general permit under the USACE's Nationwide Permit Program. Use of a turbidity system during installation of the temporary work trestle/causeway and placement of temporary fill material and during demolition of the piers for the existing bridge would minimize the potential for adverse impacts to water quality due to resuspension of bottom sediments or any inadvertent release of materials to the surface water. Additionally, clean rock fill without fines (very small soil particles) will be placed within the river for the temporary work trestle/cause way to further minimize any potential increases in suspended sediment within the river. Adherence to the permit conditions would serve to protect the water quality of the Genesee River. Removal of the old bridge piers would require a permit from the USACE in accordance with Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Installation of the new bridge would not require authorization from the USACE because it would be located outside the ordinary high water elevation.

Removal of the existing piers in the river could result in temporary disturbance to water quality, but because the bottom of the Genesee River consists primarily of bedrock, temporary water quality degradation would be minimal and localized; these impacts would mostly be limited to increased turbidity and suspended sediments that may have been deposited around the existing piers. In-water construction for the demolition of the existing pier structures would only last approximately three months. Mitigation measures, such as the use of turbidity curtains, will be employed where feasible and necessary to minimize impacts to the river. These impacts would be minor and temporary and any impacts to the river from such construction activities, if they take place, are not expected to violate the surface water quality standards set by NYSDEC pursuant to the federal Clean Water Act. Shortly after completion of the Project, water quality in the area would be expected to return to a level consistent with the river's intended use.

In addition, as discussed in Chapter 4.4.8, "Stormwater," to minimize the potential for erosion during construction, soil erosion measures will be implemented as part of a Stormwater Pollution Prevention Plan (SWPPP), developed in accordance with applicable requirements under the Clean Water Act, during construction. These measures would serve to minimize the potential for pollutants from construction of the Project to reach the Genesee River or Stream B.

Wild and Scenic Rivers

As detailed in Chapter 4.4.3, "Wild and Scenic Rivers," the Genesee River through Letchworth State Park and through the Project site has been protected by special federal legislation, the Genesee River Protection Act of 1989; is listed on the Nationwide Rivers Inventory (NRI) for its geologic, recreational, and scenic value; and is designated a Scenic River by New York State. During construction, the measures taken to protect the waters of the river, discussed above, would also protect its scenic and recreational qualities. The effects of construction activities on the values for which it was protected and the qualities of the river that are noted in its federal NRI designation¹ are described in Chapter 4.4.3, and summarized below.

- **Free-Flowing Conditions:** The Project would not permanently adversely affect free-flowing conditions. Removal of the existing bridge piers would return the river to a more free-flowing condition, but would require construction work in the water. In-water work would include the use of turbidity curtains and could potentially include the use of a causeway to allow closer access to the piers for removal. These features would temporarily affect free-flowing conditions in order to create a long-term benefit.
- **Outstandingly Remarkable Values:** As discussed in Chapter 4.4.3, the Outstanding Remarkable Values (ORVs) for the Genesee River are its geologic value (its three major waterfalls), its recreational value (paddling opportunities north of the Project area), and its scenic value. The three waterfalls would not be affected by the construction activities, except for the potential temporary effect to free-flowing conditions of the water just upstream of the Upper Falls (see discussion of free-flowing conditions above). Recreational opportunities (for paddling) north of the Project site would not be affected by the Project's construction activities, given the distance of approximately four miles from the construction site to the paddling area. In terms of scenic qualities, construction activities would be visible to park patrons from a number of viewpoints and vistas nearby during the construction period. This would be temporary, and would not affect the scenic qualities of the river north of the Project site.
- **Within-Channel Conditions:** The only in-water work that would be required for the installation of the new bridge would be the installation of the temporary work

¹ <http://www.nps.gov/ncrc/programs/rtca/nri/states/ny.html>.

trestle/causeway that would be used for construction and demolition activities. This temporary construction element would not affect within-channel conditions. In-water work associated with removal of the existing bridge piers could cause temporary water quality degradation, but this effect would be minimal and localized because the river bottom consists primarily of bedrock. These impacts would mostly be limited to increased turbidity and suspended sediments that may have been deposited around the existing piers. Measures, such as the use of turbidity curtains, would be employed where feasible and necessary to minimize impacts to the river. As discussed below under “Stormwater Management,” the Project would implement erosion and sediment control measures and stormwater control measures during construction to protect the water quality of the Genesee River.

- ***Riparian and Floodplain Conditions:*** As the new bridge would be keyed into the bedrock of the gorge, there would be no re-grading activities or other physical alteration of the Genesee River’s riparian zone. Protection would be placed on the gorge walls in the vicinity of the new abutments to stabilize the area and prevent erosion.

As discussed in Chapter 4.1, “Process, Agency Coordination, and Public Participation,” the Portageville Bridge Project does not require a Wild, Scenic and Recreational Rivers permit from New York State because the permit requirement is preempted under applicable federal law. Nonetheless, Norfolk Southern will work with NYSDEC and OPRHP to address any concerns related to protection of the Genesee River, to the extent feasible and appropriate. Any such measures would be consistent with applicable federal law including the Interstate Commerce Commission Termination Act of 1995 and the Federal Railway Safety Act of 1976.

Measures developed in consultation with OPRHP to mitigate construction-period impacts on the scenic qualities of the Genesee River would be implemented as necessary during construction.

Navigable Waters

As navigation opportunities are limited in this portion of the Genesee River due to the Upper Falls, construction activities would not affect navigation in the Genesee River. However, the Genesee River is considered by the USACE as a navigable waterway. Therefore, construction of the temporary work trestle/causeway and removal of the existing bridge piers in the river would require authorization from the USACE under Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act.

Floodplains

As discussed in Chapter 4.4.5, “Floodplains,” the Project site is located outside of the Federal Emergency Management Agency (FEMA) 100-year floodplain, and this portion of the Genesee River is not a regulated floodway. Therefore, Project construction would not impact any floodplains or regulatory floodways.

Coastal Resources

As described in Chapter 4.4.6, “Coastal Resources,” coastal management policies do not apply to the Project site.

Aquifers, Wells, and Reservoirs

Should groundwater dewatering be required, discharge of water will be conducted in accordance with applicable requirements for discharge to surface water. Measures to be implemented include treatment measures such as settling basins to segregate sediments from the water prior to discharge to surface water.

Stormwater Management

Construction would disturb more than one acre of land and would involve an application for a State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity (GP-0-10-001). Plans and details will be developed during the detailed design phases of the Project in accordance with Section 209 (Temporary Soil Erosion and Water Pollution Control) of the NYSDOT Standard Specifications in order to satisfy the SWPPP requirements and the SPDES program. These plans and details will include both temporary and, as applicable, permanent measures to prevent soil erosion. These measures will serve to minimize the potential for pollutants from the Project to reach the Genesee River.

General Ecology and Wildlife Resources

As described in Chapter 4.4.9, “General Ecology and Wildlife Resources,” the area around the Project site includes a number of ecological communities, including two that are considered significant from a statewide perspective. Due to the habitat diversity and large acreage of forested land in Letchworth State Park, a variety of birds, mammals, reptiles, amphibians, and insects, including several state-listed species, are supported. Letchworth State Park has been identified by OPRHP as a Bird Conservation Area (BCA) and by the National Audubon Society as an Important Bird Area. As discussed in Chapter 4.4.9, the analysis of ecology and wildlife resources considers the entire area that would be disturbed by Project construction, referred to as the “Project area.” This area encompasses the land extending approximately 200 feet south of the proposed new railroad alignment and roughly 1,500 linear feet west and east from the center point of the existing Portageville Bridge. It also encompasses the areas to the north and south of the railroad alignment on the west side of the Genesee River where Park Road would be shifted and where the existing parking area would be relocated. In total, the Project area is approximately 19 acres.

Habitats

Construction activities—including construction of the new bridge, shifting Park Road westward in the vicinity of the bridge, relocation of a parking lot, and relocation of two trailheads—would require the disturbance of approximately 4.1 acres of the approximately 19-acre Project area. In total, approximately 3.0 acres of forested habitat, including some areas of maintained/mowed lawn, within the existing right-of-way would be cleared. The Project would also require the filling of 0.03 acres of Wetland A, described above; and the disturbance of approximately 1.1 acres of shale cliff and talus slope, as discussed below. The areas that would be cleared are shown in **Figure 4.5-4**.

It is estimated that the realignment of the railroad approaches to meet the new bridge, shifting of Park Road westward, and relocation of the Highbridge Parking Area, would require the removal of approximately 1.7 acres of hemlock–northern hardwood forest on the west side of the Genesee River. This hemlock–northern hardwood forest represents edge habitat that borders Park Road, the parking area, and the existing rail right-of-way. While portions of this community represent undisturbed high quality habitat, other areas, particularly along the existing right-of-way, have previously been disturbed. In addition, New York Natural Heritage Program (NYNHP) guidance notes the removal of peripheral/edge habitat, which would occur from the construction of the Preferred Alternative, results in less impact to the integrity of an overall community than the removal of core areas within a community. Thus, while the Preferred Alternative would result in adverse impacts to the hemlock–northern hardwood forest community, it would occur in an area that has experienced some disturbance and would not impact core areas within this community type.

The realignment of railroad approaches to meet the new bridge would also require clearing of approximately 1.3 acres of trees on the east side of the river. Approximately 0.9 acres of the 1.3

acres contains disturbed successional northern hardwood forest. The remaining 0.4 acres is hemlock–northern hardwood forest located along the steep slope. Portions of both of these communities are previously disturbed. Similar to the west side of the river, the pockets of hemlock–northern hardwood forest are located along the edge of the right-of-way and higher quality representations of this community are located throughout the interior portions of the park. Thus, the proposed removal of approximately 0.9 acres of disturbed successional northern hardwood forest and approximately 0.4 acres of hemlock–northern hardwood forest edge habitat would not be considered a substantial adverse impact.

It is estimated that a total of 1.5 acres of shale cliff and talus community on both sides of the river is located within the Project area. Of this area, approximately 1.1 acres could be adversely affected by the construction of the arch buttress foundations due to controlled blasting and excavation. This shale cliff and talus community occupies 427 acres within the park, and portions of this community within the Project area have been previously disturbed through construction of the existing bridge, roadway, paths, etc. within the park. Therefore, the potential disturbance to or loss of 1.1 acres of this community at this location would not be considered an adverse impact to the shale cliff and talus community within the park.

Fish and Wildlife

The temporary loss of approximately 0.05 acres of aquatic habitat due to the installation of the temporary trestle/causeway would not adversely affect fish of the Genesee River. Fish would be expected to avoid the area where the temporary trestle/causeway would be installed due to the noise and temporary placement of the turbidity curtain. As discussed above under “Surface Waterbodies and Watercourses,” measures will be implemented during installation of the temporary trestle/causeway to minimize the potential for increased concentrations of suspended sediment and turbidity. Therefore, construction activities would not result in water quality conditions with the Genesee River that would have the potential to adversely affect fish. Following the demolition of the piers for the old bridge, the fill material will be removed and the area restored to natural grade and rock material placed within the river in the location where the piers were removed only as necessary to establish natural looking contours.

As described in Chapter 4.4.9, “General Ecology and Wildlife Resources,” federally and state protected species have been noted in the area of Letchworth State Park and Wyoming and Livingston Counties. Impacts from construction of the Project would include permanent loss of terrestrial vegetation and habitat (as discussed above), and temporary, indirect impacts and potential terrestrial disturbance due to noise, construction vehicle ingress/egress, temporary lay-down areas, and other transient uses. The Project would require the removal of vegetation within the Project area, including small areas of hemlock–northern hardwood forest and shale cliff/talus slopes, both of which are state-listed significant ecological communities. In coordination with OPRHP and NYSDEC, the Project will include a tree planting and revegetation program to mitigate for the habitat loss due to the removal of forested vegetation. As noted above in the discussion of rock excavation, controlled blasting would be used to excavate the area of the cliff where the bridge foundations would be constructed.

Construction of the Project has the potential to disturb wildlife species in the immediate area, including protected species. Construction activities that generate the most noise, such as vehicle and heavy equipment operation, controlled rock blasting, and pile drilling, have the greatest potential for indirect impacts to wildlife in the area. Of the different construction activities anticipated, pile drilling would generate the highest noise levels. As discussed above in Section 4.5-2 of this chapter, pile drilling may occur for approximately two months on each side of the bridge. The Project would also require controlled blasting, anticipated at one to two times per week for 4 to 8 months on the west side of the river and 6 to 11 months on the east side. While controlled blasting is noisy, the noise produced occurs for a very short time (less than a minute)

and few (one to two) controlled blasting events would occur each week. To minimize the impacts on wildlife related to construction noise, Norfolk Southern will work in consultation with relevant resource management agencies to identify means to reduce impacts on species of concern to the extent feasible.

Noise associated with human activities can influence wildlife community composition by displacing some species while increasing the abundance of others (Bayne et al. 2008, Francis et al. 2009). At the population level, noise disturbance can decrease the production of offspring and increase predation rates (Habib et al. 2007, Chan et al. 2010). However, many studies have also found loud noises, such as explosions, to have no effect on the condition, behavior, or reproductive success of wildlife, including rare and sensitive species (e.g., Butler et al. 2009, Bisson et al. 2009, Barron et al. 2012).

The effects of construction noise at the Portageville Bridge on wildlife would be offset to some extent by the existing noise that already occurs at the site. Specifically, in the existing condition, freight trains cross the existing bridge approximately 10 to 14 times per day. Trains are typically 2,680 feet long, and operate at approximately 10 MPH or less across the bridge, for a noise event duration of approximately four to six minutes for each train pass-by. Noise levels generated by the passing trains are typically about 95 dBA (see Chapter 4.4.17, "Noise"). The wildlife communities surrounding the Project site have been established under this existing level of disturbance associated with train passage. Individual animals using the habitats within the vicinity of the Project site are inherently accustomed to the loud noise levels associated with train pass-bys.

The noise generated by moving freight trains would be expected to be substantially greater than the noise generated by most construction activities at the site (see the "Noise and Vibration" section later in this chapter). Controlled rock blasting, which would be muffled by blast mats, would produce a low rumbling sound that would result in less airborne noise than freight trains passing across the existing bridge. As discussed later in this chapter under "Noise and Vibration," pile drilling (assuming two drilling rigs operating simultaneously) would generate a noise level of approximately 85 dBA, which would be 10 dBA below the noise levels generated by train pass-bys (although, pile drilling activity would be of longer duration than a train pass-by). In addition, sound generated by the Upper Falls directly beneath the bridge has a strong masking effect on other sounds in the area, and would be expected to partially mask construction noise.

Given that construction activities for the Project would result in lower instantaneous (peak) noise levels than the trains that cross the existing bridge, no substantial adverse impacts to wildlife surrounding the Project area would be expected at the individual, population, or community level. Sensitive species that are intolerant of high noise levels or other human activities are unlikely to be present in the area, given the disturbances that already occur there. Therefore, wildlife communities in the habitats surrounding the bridge are likely composed of primarily disturbance-tolerant generalists (Francis et al. 2009), or specialists that have gradually habituated to the chronic disturbance of passing freight trains over time. As such, Project construction would be unlikely to alter species assemblages or otherwise negatively change wildlife in the surrounding area from its present state.

Individual wildlife that do not habituate to or tolerate the construction activity would be expected to move north toward more interior habitat with lower levels of disturbance. Substantial areas of suitable habitat are present throughout the 14,000-acre Letchworth State Park. Any displacement of wildlife from this small area relative to the total size of Letchworth State Park would be unlikely to adversely impact individuals, and less likely to affect the size or viability of local or regional populations of the species. Additionally, any such impacts from Project construction would be temporary, and would not have long-lasting, permanent effects on wildlife. Species with low mobility, such as salamanders, may not be capable of relocating to alternative

habitat elsewhere within the park, and any such individuals present within the area of disturbance may be lost from the population. Loss of individuals potentially inhabiting these small areas of habitat would not be expected to have adverse impacts to the species' populations within the park or surrounding landscape.

Threatened, Endangered, and Special Concern Species

The anticipated effects of Project construction on threatened, endangered, and special concern species that may be present near the Project site (as described in Chapter 4.4.9, "General Ecology and Wildlife Resources," are discussed below.

- **Coast Creeping Moss**

Coast creeping moss (*Conardia compacta*) was recorded in the vicinity of the shale cliff and talus slope community within 0.5 miles of the Project area in 2005. Within the Project area, the shale cliff and talus slope community occupies approximately 1.5 acres and is associated with the vertical cliff walls of the gorge on the west side of the river and the vegetated steep slope/ridge located on the east side of the river. Construction of the Project would result in disturbance to and potential loss of approximately 1.1 acres of this community within the Project's construction zone due to the construction of the arch buttress foundations. On the basis of the presence of the shale cliff and talus slope community within the Project area and records of this species growing in similar habitat near the Project area, there is the potential for coast creeping moss to occur within the portion of this community that could be permanently lost due to the construction of the arch buttress foundations. Given the critically imperiled status of this species, its potential loss within the 1.1 acres of shale cliff and talus slope community that would be disturbed due to construction, and the loss of this area as potential habitat for this species, would be considered an adverse impact. Mitigation requirements for the potential loss of this species within the Project area will be developed with OPRHP and in coordination with NYSDEC. Once construction is complete, disturbed areas of rock slope that had been within the construction zone could potentially revegetate. As discussed in Chapter 3, "Project Alternatives," within the area close to the new bridge structure, drape netting (a metal mesh) would be used to stabilize the rock face. This stabilization method was selected because vegetation can grow on the rock through the netting. Construction of the Project would not impact known populations of coast creeping moss located outside of the Project area.

- **Bald Eagles**

An active bald eagle nest is located within approximately 1,200 feet (¼ mile) of the Project area. The National Bald Eagle Management Guidelines established by the U.S. Fish and Wildlife Service (USFWS) to help minimize the potential for impacts to bald eagles (USFWS 2007) outline the relative sensitivity of eagles to disturbance during different stages of the nesting season. Eagles are believed to be most sensitive during courtship and nest-building, which take place in the northern U.S., including New York State, between December and March. Eagles disturbed during this phase are apt to abandon the area. Once they are on a nest, eagles become less likely to flush in response to a disturbance (Grubb and King 1991, Grubb et al. 1992), but are still sensitive to disturbance during egg-laying, incubation, and the first few weeks of chick rearing (collectively, February through May in New York State; USFWS 2007). Adults can be easily disturbed while foraging away from the nest (Grubb and King 1991, Grubb et al. 1992). Disturbances to foraging adults during the nesting season could reduce the amount of food brought to the nestlings and in turn, slow down nestling growth. Disturbances to foraging eagles could also prolong their time spent away from the nest, which leaves nestlings more vulnerable to cold or heat stress and predation (Steidl and Anthony 2000, USFWS 2007). Late in the breeding season (mid-May through August in New York State), eaglets may prematurely leave the nest (fledge) if disturbed (USFWS 2007). The USFWS guidelines note that impacts will

vary based on the visibility of the activity from the eagle nest and the degree to which similar activities are already occurring in proximity to the nest site.

The USFWS guidelines call for minimizing disturbances to nesting bald eagles by maintaining a buffer distance between the activity and the nest, which serves to minimize visual and auditory impacts at the nest site; maintaining forested or natural areas between the activity and around nest trees; and avoiding certain activities during the breeding season. The guidelines recommend minimizing potentially disruptive activities and development in the eagles' direct flight path between their nest and roost sites and important foraging areas. In addition, the guidelines prohibit the use of explosives within ½ mile (or within 1 mile in open areas) of communal roosts when eagles are congregating, without prior coordination with the USFWS and appropriate state wildlife agency (in New York State, NYSDEC).

The USFWS guidelines for minimizing disturbances to bald eagles throughout the year call for buffer areas of 330 feet to ½ mile (2,640 feet), depending on the type of activity. These buffer distances are consistent with, and supported by, the findings of multiple published studies on bald eagle behavior.² The USFWS guidelines recommend specific buffer areas for various construction activities. Those that are relevant to the Project are listed in **Table 4.5-3** below. As shown in the table, the recommended buffer for most activities ranges from 330 to 660 feet, but for blasting, the recommended buffer is ½ mile. The guidelines note that the appropriate size for the buffer can vary according to the historical tolerances of eagles to human activities in particular localities, and may also depend on the location of the nest in relation to feeding and roosting areas used by the eagles.

Table 4.5-3
USFWS Recommended Buffer Zones
Between Project Activities and Bald Eagles

Activity	Recommended Buffer Distance
Construction activity for buildings 3 or more stories in height, or disturbing more than 0.5 acre	660 feet, or as close as existing similar activity. Landscaped buffer recommended.
Clear cutting and removal of overstory trees	330 feet
Timber harvesting, including road construction and chain saw operations	660 feet during breeding season
Off-road vehicles	330 feet during breeding season, but 660 feet in open areas with visibility
Blasting and other loud, intermittent noises	Avoid blasting and other activities that produce extremely loud noises within ½ mile of active nests, unless greater tolerance to the activity or similar activity has been demonstrated by the eagles in the nesting area.

Source: USFWS, National Bald Eagle Management Guidelines, May 2007.

Based on the USFWS recommended buffer zones, the loudest construction activities associated with the Project (including pile drilling and controlled blasting, in particular) have the potential to

² For example, McGarigal et al. (1991) found that bald eagles in Oregon and Washington were reactive to people and boats up to 400 m (1,312 feet) away from their nest. Grubb et al. (1992) found that negative responses of eagles to boats, vehicles, and pedestrians faded beyond a distance of 500 meters (1,640 feet) in Michigan. Similarly, Grubb et al. (2002) found eagles nesting in Minnesota reacted to boats when they were within 800 meters (2,625 feet). Construction of a large industrial facility in Washington located 460 meters (1,510 feet) from bald eagle roosting locations had no effect on their presence at the roosts or their flush response (Becker 2002). Wintering bald eagles that were more than 1,000 meters (3,280 feet) away from a military base were infrequently flushed by loud explosions and helicopters compared to eagles that were closer to the base (Stalmaster and Kaiser 1997). People camping within 100 meters (330 feet) of bald eagle nests in Alaska caused significant, adverse changes to parental behaviors, whereas people camping 500 meters (1,640 feet) from nests did not (Steidl and Anthony 2000).

disturb the active bald eagle nest that is located less than ¼ mile from the Project site. In addition, construction vehicles that would use Park Road to access the construction site on the west side of the river would briefly pass within approximately 250 to 300 feet of the bald eagle nest, which would be slightly below the recommended buffer size of 330 feet, although there would be 250 to 300 feet of densely vegetated buffer and intervening topography to attenuate the noise. However, the eagles associated with this nest may be habituated to loud noises, since freight trains pass across the existing Portageville Bridge up to 14 times each day. The selection of the nest site and successful use of the nest indicate that the pair of eagles using this nest is tolerant of such noise levels. As discussed above, the noise levels generated by train pass-bys is generally higher than noise levels generated by construction activity, including truck noise. Moreover, Park Road is heavily used by park visitors when it is open to vehicular traffic and by snowmobiles in the winter months when it is not, and therefore is already a source of noise near the eagle nest.

If the construction noises do in fact disturb the bald eagles nesting nearby, which is not anticipated, the potential consequences could include nest site abandonment, reduced food provision to nestlings and less robust nestling growth, increased nestling mortality risk, and/or premature fledging. Should the Project's construction activity result in nest site abandonment or reduced reproductive success of the pair near the Project site for one breeding season, this would not result in adverse impacts to the size or viability of New York State's breeding population of bald eagles. Bald eagle breeding populations in New York have grown steadily over the past few decades and have grown dramatically in just the last few years. There were 92 breeding pairs known in New York State in 2005, and by 2009, 173 breeding pairs were documented.

Norfolk Southern is coordinating with the USFWS regarding measures to be integrated into the Project to minimize the potential for adverse effects to bald eagles from Project construction. A permit is being sought from the USFWS pursuant to the federal Bald and Golden Eagle Protection Act (50 CFR Part 22). Measures to be included to minimize disturbance will include the use of drilled piles rather than driven piles; the use of small charges and blast mats during controlled blasting; and, in accordance with requirements set forth in the permit, additional measures such as limiting the noisiest activities (rock blasting and pile drilling) during particularly sensitive time periods for breeding bald eagles and development and implementation of a monitoring plan to identify any signs of disturbance to nesting bald eagles during Project construction. If disturbance is observed, additional measures will be developed in consultation with USFWS.

- **Other Raptors**

Red-shouldered hawk, sharp-shinned hawk, Cooper's hawk, northern goshawk, and northern harrier are birds of prey that are listed by New York State as special concern species and that have been documented within Letchworth State Park. Each of these species is generally considered to be sensitive to human disturbance (Poole 2005), although Cooper's hawks have been known to occasionally breed in urban areas (DeCandido and Allen 2005, Curtis et al. 2006). Due to the daily passage of multiple freight trains and the presence of park visitors in the area, noise and human activity levels in the vicinity of the Project site may be too high for these disturbance-sensitive species to occur in the immediate area. None of these species were observed in the area during a May 17, 2012 field survey conducted for this DEIS.

If any individuals of these species occurred in the area and were disturbed by Project construction, their response would likely include temporary avoidance of the area and relocation elsewhere for the duration of the construction. Given the mobility of these species and the availability of similar habitat in the area, any individuals displaced from the areas surrounding the Project area would be expected to readily locate and occupy alternative habitat beyond the limit of disturbance. On the basis of the large territory sizes of these species (Poole 2005), it is

reasonable to estimate that no more than one or two breeding pairs of each species likely are present around the Project area and have the potential to be subjected to disturbance during Project construction. Displacement of these birds from territories in the vicinity of the Project area would have a temporary impact to these individuals by requiring them to find alternative habitat elsewhere, but would not substantially affect the size or viability of the species' local or regional populations. Abandonment of the area is considered unlikely, however, as any birds currently nesting in the area have selected breeding habitat with high baseline levels of disturbance caused by the frequent passage of freight trains. If they are present in the area, this would indicate a habituation to and tolerance of disturbance associated with repeated noise events. Since controlled blasting, pile drilling, and other construction activities would not result in higher peak noise levels than the noise generated by passing freight trains in existing conditions, this noise is unlikely to illicit a severe response such as site abandonment.

- **Grassland and Shrubland Birds**

Vesper sparrow, Henslow's sparrow, grasshopper sparrow, yellow-breasted chat, golden-winged warbler, horned lark, and upland sandpiper are grassland or shrubland bird species that nest or have historically nested within Letchworth State Park. These species generally nest in very low abundance within the park within the extremely small area of grassland habitat (less than 1 percent of the land area of the park) available within the northern portion of the park. Therefore, construction of the Project would not result in adverse impacts to these species.

Shrubland habitat used by yellow-breasted chat and golden-winged warblers is also lacking at the southern end of the park within the Project area. Aside from the railroad right-of-way and the river gorge, most of the Project area is forested. Suitable nesting habitat for these two species may be present immediately south of the Project area on privately owned land. Yellow-breasted chats are somewhat tolerant of disturbance, as evidenced by their occasional breeding within urban areas (Fowle and Kerlinger 2001). Golden-winged warblers are also known to nest in human-disturbed habitats such as clearcut areas, unused farmland, reclaimed strip mines, and power line corridors (Confer et al. 2011). Any yellow-breasted chats or golden-winged warblers occurring in the shrubland habitat east of the Project area are presently exposed to high levels of disturbance generated by the regular passage of freight trains through the area, and the introduction of construction noise therefore may not substantially increase the disturbance to these species. Yellow-breasted chats and golden-winged warblers that are accustomed to and tolerant of the train noise would not be expected to experience any adverse effects from Project construction activities.

- **Cerulean Warbler**

Because cerulean warblers need large unbroken tracts of mature deciduous forest for breeding, individuals of this species would not be expected to occur in the vicinity of the Project area, and are instead more likely to occur to the north, towards more interior forest. Any cerulean warblers potentially occurring within close proximity to the Project area would inherently be habituated to and tolerant of high levels of disturbance due to the routine passage of freight trains through the area. Therefore, no adverse impacts to cerulean warblers would be expected to occur.

- **Red-Headed Woodpecker**

Red-headed woodpeckers have the potential to breed in the vicinity of the Project area. Other than a description of red-headed woodpeckers in Illinois as "tolerant of humans" (Graber and Graber 1977), and occurrences of red-headed woodpeckers in city parks (Smith et al. 2000), the disturbance sensitivity of the species is generally unknown. In contrast, the disturbance sensitivity of the federally endangered red-cockaded woodpecker has been studied, and may be similar to that of the red-headed woodpecker of the same taxonomic family. Studies have documented that red-cockaded woodpeckers occur on many military bases within their range,

and are not disturbed by military training noise, including gunfire and helicopter noise (Pater et al. 1999, Delaney et al. 2002).³ The peak noise levels associated with the disturbances this woodpecker tolerated are comparable to peak noise levels that would likely be generated from controlled rock blasting and pile drilling for the Project's construction, and to peak noise levels currently generated at the Project area by passing freight trains.

As with the other species discussed above, any red-headed woodpeckers potentially occurring in the vicinity of the Project area are inherently tolerant of and habituated to the peak noise levels associated with regular freight train pass-bys throughout the day. Controlled rock blasting, pile drilling, and other construction activities would not be expected to result in new disturbances that would cause the red-headed woodpeckers to be displaced from the area or otherwise negatively affected.

If any individuals of these species occur in the area and were indeed disturbed by Project construction, their response would likely include temporary avoidance of the area and relocation elsewhere for the duration of the construction. Given the mobility of the species and the availability of thousands of acres of woodland habitat elsewhere nearby, any red-headed woodpeckers displaced from the areas surrounding the Project area would be expected to readily locate and occupy alternative habitat beyond the limit of disturbance. Displacement from the Project area would have a temporary impact to these individuals by requiring them to relocate, but would not be expected to adversely affect the size or viability of the species' local or regional populations.

- **Bats**

The eastern small-footed bat is a New York State species of special concern that occurs in Livingston County and, outside of winter when it hibernates in caves and mines, primarily inhabits hemlock–northern hardwood forests containing shale cliff and talus communities. The closest known hibernaculum (protected location used by bats for hibernating) is about 1 mile from the Project area. On the basis of its geographic range and habitat associations, the eastern small-footed bat would have the potential to occur within and near the Project area outside of the winter hibernation period. The northern long-eared bat, is a species proposed for listing as a federally endangered species by the USFWS, occurring in Livingston and Wyoming Counties. It inhabits mature, interior, closed-canopy forests, such as those within Letchworth State Park, and has historically hibernated along with eastern small-footed bats and other bat species in the hibernaculum approximately 1 mile north of the Project area. However, as discussed in Chapter 4.4.9, "General Ecology and Wildlife Resources," populations of the northern long-eared bat in New York State have declined 98 percent in recent years due to the outbreak of white-nose syndrome, and it is uncertain whether any population that may have once occurred in Letchworth State Park is still extant. In addition, any northern long-eared bats potentially remaining in Letchworth State Park would be expected to occur in interior forest rather than in the fragmented and edge-dominated section of the park in which the Project area is located. As such, northern long-eared bats are highly unlikely to occur in the Project area.

The sensitivity of hibernating bats to noise and other disturbances has been well-documented; noise and movement can easily arouse bats from hibernation, which lowers their chances of surviving the winter (Thomas et al. 1990, Boyles and Brack 2009). While the noisiest of the

³ Red-cockaded woodpeckers exposed to military training noise did not flush from their nest when: artillery simulator blasts and 0.50-caliber blank fire events were more than 499 feet away; helicopters were more than 197 feet away; small-caliber live fire was more than 1,312 feet away; large-caliber live fire was more than 700 meters (2,297 feet or 0.4 miles); and when grenade simulators were over 200 meters (656 feet) away (Pater et al. 1999, Delaney et al. 2002). Corresponding sound levels for these disturbances (noise levels that did not cause red-cockaded woodpeckers to flush from their nest) were 84 dBA for artillery simulators, 72 dBA for 0.50-caliber blank fire, 85 dBA for helicopters, 77 dBA for small-caliber live fire, 85 dBA for large-caliber live fire, and 84 dBA for grenade simulators.

construction activities, pile drilling, may be audible for up to a mile from the construction site, and blasting may be audible for up to ½ mile from the site, the noise levels would be much lower than at the construction site because noise is attenuated with distance and would not be expected to adversely affect any bats potentially occurring in the hibernaculum that is approximately 1 mile north of the bridge.

In contrast to the documented sensitivity during hibernation, the sensitivity of non-hibernating bats to disturbances is poorly understood. As with most animals, it is likely that non-hibernating bats initially experience increased heart rates and acute stress levels in response to novel disturbances such as loud noises (Bowles 1995, Niver 2009), but any effects this may subsequently have on their condition, reproduction, and survival are unclear. Research findings on this subject have been somewhat ambiguous. Some studies outside of the hibernation season have shown foraging and nursing behaviors of bats to be easily disrupted by disturbances from human activities, including cave tourism (Mann et al. 2002), music concerts (Shirley et al. 2001), and even minor vegetation clearing near roost trees (Callahan 1993). Bats have also been shown to avoid foraging in noisy environments (Schaub et al. 2008, Murphy et al. 2009). Reductions in maternity colony size and complete colony abandonment following disturbances have been reported (Barbour and Davis 1969, Stihler and Hall 1993). Other studies, however, have found loud noises and reverberations associated with aircrafts and military training activities to have no noticeable effect on foraging or roosting locations of bats (Shapiro and Hohmann 2005, Le Roux 2010). Some bats, such as the federally endangered and closely related Indiana bat (*Myotis sodalis*), are known to roost along interstate highways, near airports (Niver 2009), and under bridges (Keeley and Tuttle 1999), suggesting they are tolerant of noises and vibrations associated with human activity. The foraging behaviors and roosting locations of Indiana bats on military bases did not differ between nights with and without loud training exercises (Shapiro and Hohmann 2005), which also suggests that some bats are not easily disturbed by loud noises outside of the hibernation period.

The hearing ranges of eastern small-footed and northern long-eared bats have not been described, but are likely similar to that of the closely-related little brown bat (*Myotis lucifugus*). Little brown bats detect sounds between 10-130 kHz (Moss and Schnitzler 1995), with peak sensitivity between 35-40 kHz (Grinnell 1963). Eastern small-footed bat echolocation calls are also likely to be similar to those of the little brown bat which range from 38-78 kHz (Fenton and Bell 1981). Echolocation calls and social signals of the northern long-eared bat range 49-117 kHz and 30-70 kHz, respectively (Faure et al. 1993, Miller and Treat 1993). Noises from construction equipment (e.g., rock crushers, earthmovers, bulldozers) and rock blasting typically fall well below these frequency ranges (Delaney and Grubb 2004, Niver 2009), and would be expected to be less audible to *Myotis* bats and less likely to interfere with their ability to echolocate (Niver 2009). Animals that use echolocation have an acute ability to sense reverberations (Simmons 1983) and it has been suggested that vibrations generated from rock blasting or other human activities could cause bats to abandon roosts (Niver 2009), but as mentioned above, many bats are known to roost in locations with substantial vibration levels such as major airports and military firing ranges.

Eastern small-footed bats have the potential to occur within and in the vicinity of the Project area, but have not been confirmed. Northern long-eared bats have also not been confirmed in the Project area and are considered to have low potential to occur given their near extinction in New York State and the lack of preferred habitat types within the Project area. The existing Portageville Bridge is currently in use by Norfolk Southern for daily rail freight service. Trains that are generally approximately 2,700 feet long pass over the bridge at slow speeds (10 miles per hour or less) approximately 10 to 14 times each day (including nighttime). During field visits, trains were observed to take approximately 4 to 6 minutes to pass over the bridge, and created substantial noise as they did so. Typical instantaneous peak train noise associated with a train pass-by is estimated at 95 dBA at the bridge. In addition, the waterfall located directly under the

bridge, Upper Falls, generates notable noise in the vicinity of the Project area and has a masking effect on other sounds. Use of the Project area by eastern small-footed or northern long-eared bats would depend on tolerance of individual bats to the changes in noise and vibration levels resulting from the passage of approximately 10 to 14 trains over the existing bridge. Such individuals may adjust to the additional noise and vibration generated by the construction of the Project such that potential use of the Project area as roosting and foraging habitat is not adversely affected.

Some individuals, however, may be startled by the noise and vibration sufficiently to flee from the day-time roost areas near the Project area, shifting their roosting areas farther away from the construction area. Given the abundance of hemlock–northern forest and shale cliff and talus community within Letchworth State Park (2,401 acres and 427 acres respectively), suitable alternative roosting habitat would be expected to be available nearby. Eastern small-footed and northern long-eared bats naturally change roost locations daily or semi-daily throughout the non-hibernating seasons (Owen et al. 2002, 2003; Johnson and Gates 2008, Johnson et al. 2009), and would therefore be likely to easily relocate away from any construction activities that individuals find disturbing without adverse impact. Should any displacement of adult female bats occur during the maternity period (June–July), when pups are not yet able to disperse, construction of the Project would have small potential to result in some loss of young and cause a decrease in juvenile recruitment during the first year that construction occurs within the maternity period. However, reproductive female eastern small-footed and northern long-eared bats naturally switch roost sites repeatedly during the maternity period (Menzel et al. 2002, Johnson and Gates 2008, Johnson et al. 2009, Patriquin et al. 2010). Therefore, any potential displacement of nursing bats that may occur in the vicinity of the Project area would be unlikely to affect their reproductive success. Following this first year of construction, ongoing construction activities would prevent roosting in the vicinity of the Project area by individuals sensitive to the construction activities. Construction of the arch buttress foundations for the Project would result in the loss of approximately 1.1 acres of shale cliff and talus slope occurring on the east and west sides of the gorge. If eastern small-footed bats occur in these areas outside of the winter hibernation period, the acreage lost during construction of the Project would represent a minimal reduction in the amount of potential eastern small-footed bat habitat present throughout the river gorge within Letchworth State Park and elsewhere within the species' range. Given that eastern small-footed bats roost on south-facing slopes (Johnson and Gates 2008), which neither side of the gorge within the Project area provides, these areas that would be affected by Project construction do not represent optimal eastern small-footed bat habitat and their loss would not have an adverse impact to the size or viability of local or regional populations. Tree clearing for the Project will take place only during the winter hibernation period (October 31 to March 31), which would avoid the possibility of disturbing any eastern small-footed bats actively using the habitat outside the hibernation period.

The clearing of approximately 3 total acres of successional northern hardwood forest and mature, mixed hemlock–northern hardwood forest for the new approaches to the bridge and the relocation of Park Road and the Highbridge Parking Area would also represent a negligible reduction in the thousands of acres of woodland available to northern long-eared bats within Letchworth State Park and neighboring areas. In addition, all tree removal would occur along forest edges with the rail right-of-way, road, and parking area, where trees are of low value to the northern long-eared bat. As discussed in Chapter 4.4.9, "General Ecology and Wildlife Resources," northern long-eared bats tend to avoid forest edges and roads in favor of interior forest habitat for both foraging and roosting. However, because it remains possible that northern long-eared bats could roost within the Project area, all tree clearing for the Project will be limited to the period from October 31 to March 31 to follow USFWS-recommended guidelines and avoid potential removal of an active roost tree (USFWS 2014). Based on the conservation measures proposed, FHWA determined that the Project may affect, but is not likely to adversely affect, the

proposed endangered northern long-eared bat. In a letter dated May 14, 2014, the USFWS concurred with this determination. More detailed information on northern long-eared bats and the Project's potential effect on the bats is provided in a Biological Evaluation that was prepared for the Project and submitted to the USFWS. This information and correspondence from the USFWS related to the Biological Evaluation are provided in **Appendix B** of this DEIS.

- Timber Rattlesnake

Dens of the New York State-threatened timber rattlesnake have been recorded several miles north of the Project site in Letchworth State Park and an individual timber rattlesnake has been observed approximately one mile north of the Project site (Roblee 2012). As described in Chapter 4.4.9, "General Ecology and Wildlife Resources," the Project area does not appear to be suitable for denning habitat for timber rattlesnakes, and no dens have been noted within proximity of the bridge. Neither side of the gorge offers a south-facing slope and both are in shade much of the day. However, the hemlock–northern hardwood forest ecological community on the west side of the river and the successional northern hardwood forest on the east side of the river, the railroad habitat community, and the shale cliff and talus community within the Project area do have the potential to provide suitable summer habitat, or to be used as habitat for individuals in transit between their winter denning habitat and their summer home range.

Therefore, during the period when timber rattlesnakes are not in hibernation, construction of the Project would have the potential to result in direct impacts to timber rattlesnakes that may occur within the Project area. Direct impacts would include loss of individuals during pre-construction activities such as clearing and grading, and placement of silt fences; and during construction due to collision with construction equipment, and as a result of blasting activities. The greatest potential for losses of individuals would occur during the spring and fall when timber rattlesnakes are active during daytime at the same time as construction activities. During the summer, timber rattlesnakes are primarily active at twilight or are nocturnal, and construction activities would have a lower potential to result in losses of individuals. Because there is no known den site within the Project area, and the closest known den site is several miles away, construction of the Project would not be expected to adversely affect birthing rookeries. Given that distances migrated from dens generally range from 0.5 to 1 mile, the number of individuals with the potential to occur within the Project area when construction activities are occurring and, possibly lost, would be expected to be small and would not be expected to result in adverse impacts to local and regional populations of this species.

The New York Natural Heritage Program has given the timber rattlesnake a rank of S3—Vulnerable, meaning that this species is vulnerable and at moderate risk within New York. Given the status of this species, and the potential for construction of the Project to result in loss of some individuals, measures will be developed in consultation with OPRHP and NYSDEC to avoid direct impacts to the timber rattlesnake and further minimize potential adverse effects to this species. Examples of measures that could be considered include: conducting vegetation clearing during the winter denning period (when timber rattlesnakes are least likely to occur within the Project area), installing silt fencing or other fencing around the areas of disturbance prior to when snakes are expected to migrate from the winter dens, training contractors to monitor for coiled and crossing snakes and reduce travel speeds, and surveying construction areas for snakes prior to conducting construction activities.

Timber rattlesnakes that occur within the Project area but that are not directly impacted by construction may be indirectly affected if construction activities make the habitats within or adjacent to the Project area unsuitable due to increased noise and vibration. Individuals using the habitats in the vicinity of the existing bridge would be expected to be habituated to and tolerant of the noise and vibration presently generated by freight train traffic through the area, and, therefore, would not be adversely affected by the noise associated with construction activities. However, should bridge construction decrease the suitability of the Project area and

adjacent areas as timber rattlesnake summer habitat or for use in transit between winter den and summer habitat, individuals would be expected to temporarily avoid the area and relocate elsewhere for the duration of the construction. Given the availability of similar cliff and woodland habitat for several contiguous miles along the river corridor to the north and east, any timber rattlesnakes displaced from the Project area and vicinity would be expected to find suitable available habitat beyond the limit of disturbance. Therefore, these indirect impacts would not be expected to result in adverse impacts to local or regional populations of this species.

- **Spiny Softshell Turtle**

Spiny softshell turtles are not considered to have the potential to occur within the Project area and would not be impacted by Project construction.

- **Wood Turtle**

Wood turtles have the potential to occur near Stream B. Stream B would not be directly affected by the Project and the stream and its riparian zone would continue to represent potential wood turtle habitat in the area. During Project construction, wood turtles potentially inhabiting the stream could be displaced by the noise and other construction activity, although the sensitivity of wood turtles to such disturbances is unknown. Given the regular passage of freight trains through the site, any wood turtles occurring in the area would be acclimated to and tolerant of high levels of disturbance, and may not be displaced or otherwise affected by Project construction. If Project construction did in fact create a notable disturbance to wood turtles, these individuals would be negatively impacted by having to relocate further up- or downstream. These impacts would be temporary and not be expected to measurably reduce the size or viability of local populations.

- **Jefferson and Blue-Spotted Salamanders**

Jefferson and blue-spotted salamanders are New York species of special concern that occur in the region, but are unlikely to occur within or in close proximity to the Project area due to a lack of suitable breeding pools. Wetland A does not appear to provide suitable breeding habitat for either species. If present, filling of a portion of the wetland would eliminate potential blue-spotted and Jefferson salamander breeding habitat from the Project site, and in turn, would also reduce the likelihood of any non-breeding salamanders occurring in the surrounding upland.

- **Insects**

The gray petaltail dragonfly, a New York State species of special concern, is known to occur in seep areas outside of the current railroad right-of-way within Wyoming County (west side of the river). Wetland A has the potential to represent habitat for the gray petaltail dragonfly, but the species is not known to occur within this wetland. If the gray petaltail dragonfly inhabits Wetland A, the loss of 0.03 acres of this wetland as a result of the Project construction would have a minimal effect on populations of this species, which ranges state-wide and throughout the majority of the eastern and southern United States. Therefore, construction of the Project would not result in adverse impacts to the gray petaltail dragonfly.

The cobblestone tiger beetle, a New York State rare species, has been identified along the Genesee River in the vicinity of Letchworth State Park. Suitable habitat for the cobblestone tiger beetle was not observed within the Project area and this species was not included in the NYNHP records for the Project area, nor was it observed during field investigations. Since potential habitat for this species is not present within the Project area, construction of the Project would not have the potential to adversely affect this species.

Conclusion

Construction activities for the Project have the potential to adversely affect wildlife in the area. As discussed above, wildlife species that are present in the Project area are most likely already tolerant of and habituated to noise, because of the regular passage of freight trains on the railroad right-of-way and existing bridge. Nonetheless, there is the potential that some individuals would be disturbed by construction activity. However, these impacts to individuals would not result in adverse impacts at a population level to any of the species that may be affected. In coordination with OPRHP and NYSDEC, the Project will include a tree planting and revegetation program to mitigate for the habitat loss due to the removal of forested vegetation. In addition, Norfolk Southern will coordinate with the USFWS and NYSDEC to identify measures to minimize impacts to wildlife during construction of the Project.

Invasive Species

The Project would be expected to remove some invasive species during the clearing for the new bridge, shifting Park Road, relocation of a parking lot, and relocation of two trailheads. Any potential invasive species would be identified and methods to manage and reduce the spread of these species during construction would be developed. In addition, the Project would practice good housekeeping measures, such as using only locally obtained clean topsoil during final grading.

Critical Environmental Areas

As described in Chapter 4.4.10, "Critical Environmental Areas," there are no NYSDEC-listed Critical Environmental Areas (CEAs) or state forest preserve lands near the Project area or in Livingston or Wyoming Counties.

Historic and Cultural Resources

As described in Chapter 4.4.11, "Historic and Cultural Resources," the Proposed Project would result in adverse effects to Letchworth State Park, which is listed on the State and National Registers of Historic Places (S/NRHP), due to the removal and demolition of the Portageville Bridge and relocation or permanent alteration of other contributing resources to the S/NRHP-listed park.

As stipulated in the Project's Memorandum of Agreement (MOA) prepared in accordance with Section 106 of the National Historic Preservation Act, measures will be taken to avoid or minimize the potential for inadvertent effects on contributing historic resources due to construction-related activities.

The MOA includes a commitment to implement an *Avoidance Plan for the Cascade House Historic Site*, to ensure that archaeologically sensitive areas located outside the construction footprint will remain undisturbed during construction. The SHPO has reviewed and concurred with the Avoidance Plan, which requires orange construction fencing to be placed along the perimeter of the construction limits marked in the field and as indicated on site plans.⁴

For the protection of areas that may be archaeologically sensitive within the parcel on the east approach to the Portageville Bridge between Portageville Road and the existing Norfolk Southern right-of-way, restrictions will be placed on staging areas to ensure that no subsurface activities occur in this parcel. As stipulated in the MOA, the area can be used for parking for light trucks as long as no excessive rutting occurs. If the area is to be used as a storage area for

⁴ The construction limits that have been marked in the field will be field checked and re-marked as necessary prior to construction to ensure accuracy.

materials, road fabric will be placed along the ground surface to act as a barrier and prevent any of the material from migrating into the surface soils. Upon completion of the Project, the fabric will be removed and the area will be re-seeded and restored.

Additional measures will be implemented to avoid inadvertent effects from construction-related activities to nearby park features outside of the construction zone, including portions of the Gorge, Mary Jemison, and Genesee Valley Greenway/Finger Lakes Trails and fieldstone walls. The MOA stipulates that Norfolk Southern will prepare a Construction Protection Plan (CPP) to protect nearby historic park features from potential effects associated with the removal of the Portageville Bridge and construction of the new Genesee River railroad crossing, including effects associated with vibration, excavation, and damage from heavy equipment. The CPP will also include measures to control and manage fugitive dust, erosion, noise, lighting and visual effects of construction activities to the extent practicable.

For the portion of the Gorge Trail that will be relocated for the Project, Norfolk Southern shall salvage to the extent feasible, stone from the walls, for reuse along the relocated portion of the Gorge Trail. Norfolk Southern will also salvage a part of the base of Pier 11 of the Portageville Bridge to be conserved by OPRHP for display elsewhere in the park.

Parks and Recreational Resources

As described above in the discussion of construction activities, the Project's construction zone would close Park Road at the construction site for the duration of construction. Park Road runs north-south along the west side of the Genesee River gorge, for the length of Letchworth State Park, providing access to park features throughout the park. In addition, OPRHP intends to close the segments of Park Road south and north of the construction zone, between the Portageville Entrance and the Upper/Middle Falls Area turnoff (see **Figure 4.5-9**). During bridge construction, visitors to the park, including employees, would not be able to access the park by using the Portageville Entrance. The Castile Entrance would be used to reach the southern portion of the park. This entrance would be enlarged prior to the start of construction to handle the additional flows expected from detoured traffic.

Three other park features in the construction zone would also be closed and inaccessible during construction—the Highbridge Parking Area and the southern trailheads of the Mary Jemison and Gorge Trails. The Park Road and these three features would be restored upon completion of the construction.

On the east side of the river, the segment of the existing Genesee Valley Greenway Trail that passes through Norfolk Southern's right-of-way on the east side of the river would also be subject to intermittent closures of less than six months total, to protect the public during critical construction activities.

The specific effects of this construction activity on park features that would be directly affected by construction would be as follows:

- *Park Road and Park Entrances:* A total of approximately 600 linear feet of Park Road must be closed within the construction zone for the construction period. Another 120 feet of the roadway would be within a short-term construction area (in use for less than six months). As part of the construction of the Project, the segment of Park Road within the construction zone would be shifted westward from its current location. To the north and south of the construction zone, two additional segments of the road, as well as the Portageville Entrance, would be closed by OPRHP on either side of the construction zone. As a result, the Portageville Entrance and Park Road from that entrance to the Upper/Middle Falls Area turn-off would be closed for the construction period. The only park features that are accessible via the segment of road between the Portageville Entrance and the construction

site are the southern trailheads for the Mary Jemison Trail and Gorge Trail, but both of these trailheads would be closed during construction (see below). In addition, in the winter when the Portageville Entrance is closed to vehicles, the segment of Park Road between the Portageville Entrance and the Highbridge Parking Area/Mary Jemison Trail would not be accessible to snowmobiles (see the discussion of the Mary Jemison Trail below). North of the construction zone, there are no destination points and no existing adequate places to turn around between the construction closure and the Upper/Middle Falls Area turn-off, north of the Project site. Consequently, OPRHP has decided that it will close Park Road between the construction zone and the Upper/Middle Falls Area turn-off during construction of the Project. The rest of Park Road (i.e., the area north of the Upper/Middle Falls Area turn-off) would be unaffected by the Project. This section of the road would remain accessible via the other park entrances (the Castile Entrance, Perry Entrance, and Mt. Morris Entrance), and the Castile Entrance would be expanded to accommodate any additional traffic that may be diverted from the closed Portageville Entrance. To avoid congestion on busy days at the Castile Entrance because of the loss of entrance capacity at the Portageville Entrance during construction, Norfolk Southern will fund construction of a replacement entrance booth at the Castile Entrance with a two-lane entrance booth rather than the existing single lane, to provide greater capacity.

- *Highbridge Parking Area:* This small parking area is located on the west side of Park Road just south of the Portageville Bridge. It currently serves park patrons using the southern trailheads for the Mary Jemison Trail and Gorge Trail (discussed below) and is part of a snowmobile trail in the winter. The Highbridge Parking Area is in the path of the proposed new track alignment and must be relocated. A new parking area would be created on the north side of the railroad right-of-way, but would not be available until after construction is complete. The Highbridge Parking Area currently serves the southern trailheads for the Mary Jemison Trail and Gorge Trail, but both of these trailheads would be closed during construction (see below), so the temporary loss of the parking area would not affect activities in the rest of Letchworth State Park.
- *Mary Jemison Trail:* The southern end of the trail, approximately 570 linear feet, would be closed because of its location within the construction zone. Upon completion of construction, this end of the trail would be relocated to outside the railroad right-of-way. The Mary Jemison Trail extends from the Highbridge Parking Area to Council Grounds, a distance of 2.5 miles. The northern trailhead at Council Grounds would remain accessible during construction, and the remainder of the trail would remain open to the public throughout construction. The Mary Jemison Trail is used for hiking, biking, horseback riding, skiing, snowmobiling, and archery hunting in the fall as part of the deer management program in the park. For snowmobilers, the Mary Jemison Trail provides a connection from the south (via the Park Road beginning at the Portageville Entrance) to a larger corridor trail (State Corridor Trail 3) to the north. This snowmobile trail access would not be available during construction. In addition, OPRHP sometimes uses the southern end of the Mary Jemison trail for interpretive programs. Outside the construction zone, this trail would be accessible during construction via the northern end of the trail, at Council Grounds.
- *Gorge Trail:* The southern end of this trail, a total of approximately 320 linear feet, would have to be closed because of its location within the construction zone. A slightly longer section of the trail between the Highbridge Parking Area and the stone steps would be closed by OPRHP when it implements improvements to the trail as part of the construction mitigation commitments between Norfolk Southern and OPRHP. This trail extends seven miles along the western edge of the Genesee River gorge from a trailhead near the base of the existing rail bridge to the St. Helena Picnic Area in the middle of the park. Access to this

- trail is available from a number of points throughout the park and the remainder of the trail would remain open to the public during construction.
- *Genesee Valley Greenway Trail:* In Letchworth State Park, the Genesee Valley Greenway Trail runs close to the east side of the river and passes beneath the Portageville Bridge. The segment of the Genesee Valley Greenway Trail in Letchworth State Park is part of a longer trail being developed on the canal tow path and rail bed that will extend 90 miles between Rochester and Cuba (at I-86 in the Southern Tier). The segment of the Genesee Valley Greenway Trail in the park is also part of the Finger Lakes Trail, which extends 26 miles from Mt. Morris at the northern end of the trail to the hamlet of Portageville at the southern end and connects there with the main Finger Lakes Trail system that runs east and west across upstate New York. Approximately 200 linear feet of the trail, which passes beneath the railroad bridge, in this area would be subject to intermittent closures during construction to protect the safety of the public. The portion of the trail in the park is 5.75 miles long, but there is a break in the trail in the park across from Inspiration Point as a result of a slide/slope failure. The detour around this slide area takes trail users out of the park and avoids the portion of the trail that runs along the river gorge beside the Upper and Middle Falls and beneath the Portageville Bridge. Temporary closure of the segment of this trail near the existing bridge would have a similar effect, requiring trail users to take the same detour. During construction, Norfolk Southern will work with OPRHP to provide signage on the trail to inform users of the status of trail closures or partial trail closure due to Project construction, including providing updates to such signage when subsequent phases of construction impact the trail.

In addition to these direct effects on recreational elements of Letchworth State Park, construction of the replacement bridge would also result in some temporary disruptions in the portions of the park nearby. Specifically, construction would result in activities that are visually incongruent with the park—such as cranes and other visible construction equipment, as discussed under “Visual Resources” below. Construction noise would also be audible at locations near the construction zone (see the discussion under “Noise and Vibration” below). There would be noise generated by vehicles, equipment, and rock excavation through controlled blasting, as well as potentially by pile drilling if that is required. The noise would impact visitors on nearby trails and visitors using the Upper/Middle Falls Picnic Area, which is just north of the existing bridge. Depending on the construction activity occurring, the noise could also be audible at times at the Glen Iris Inn and its associated cottages and at cabins within a mile of the construction site. Normal construction work hours would be on weekdays, although some time-sensitive tasks might be performed outside those hours or on weekends. These construction hours would limit to the extent possible the disruption to guests at the Glen Iris Inn and cabins, as well as those attending events at the Glen Iris Inn.

Visual Resources

There would be temporary visual impacts to viewers and viewsheds during the demolition of the existing bridge and construction of the new bridge, including closure of trails and associated viewing locations, and the operation of heavy machinery, including construction cranes, which would be visible above the vertical limits of the existing bridge. Throughout construction, cranes and other large pieces of equipment would be visible to park visitors. Park users would be visually aware of construction activities from most of the same viewpoints that were considered in the analysis of long-term visual impacts associated with the Project. During construction, cranes would extend above the vertical limits of the bridge and would likely be visible from some additional and more distant viewpoints. It is also expected that both the existing and proposed new bridge would be present in the viewshed for a period of 2.5 to 3 years. These temporary visual impacts would be most discernable to the viewers on the Gorge Trail, the Genesee Valley

Greenway Trail and at the Upper and Middle Falls scenic overlook, where the bridge is a principal component of the view—i.e., when the bridge is a large presence in the views. At distances removed from viewpoints at the southern end of the park, visual elements contributing to the scenic quality of Letchworth State Park would not be affected during construction.

In consultation with OPRHP, measures to mitigate construction-period visual impacts to the extent practicable will be developed and implemented during construction.

Farmlands

None of the land proposed for use during construction is presently used for farming, and access to area farms would be maintained during construction.

Air Quality

The principal air quality impact associated with construction activities is the possible generation of fugitive dust, which can vary widely in terms of volume and size of particulate matter generated. Fugitive dust is associated with earth moving, such as site grading, filling, and excavation for foundations. A large proportion of the fugitive dust generated by construction activities would be of relatively large particle size, and would be expected to settle to the ground within a short distance. To minimize these problems, erosion and dust control procedures will be followed during construction.

Mobile source emissions may result from the operation of construction equipment, and from trucks delivering materials and removing debris at the construction site. Construction equipment will be equipped with air pollution control devices, where available and when not cost-prohibitive and unnecessary idling of trucks and equipment would be minimized. These requirements will be included as part of the specifications of the construction contract.

Based on an analysis prepared for much larger railroad bridge replacement projects, construction activities would not be expected to result in annual pollutant emissions exceeding the National Ambient Air Quality Standards (NAAQS). For example, the *Portal Bridge Capacity Enhancement Project Final Environmental Impact Statement* (Federal Railroad Administration, 2008) included a conformity analysis for that project, which is a rail bridge replacement project located along Amtrak's Northeast Corridor in northern New Jersey. The Portal Bridge FEIS estimated the maximum annual emissions for that project as much lower than the thresholds that would indicate inconsistency with federal air quality conformity requirements (for more information, see Chapter 4.4.15, "Air Quality"). The Amtrak project included two bridges with multiple tracks, approximately 9,000 feet long each, at a total construction cost of \$1.4 billion—demonstrably requiring much more extensive construction activities than the Portageville Bridge Project. Therefore, since the Amtrak project analysis concluded that that large construction project would have emissions below general conformity thresholds, it can be concluded that construction emissions for the substantially smaller Portageville Bridge Project will also be well below the prescribed thresholds.

Energy

Similar to roadway reconstruction or maintenance, there would be energy consumption and greenhouse gas (GHG) emissions associated with the construction of the new bridge and removal of the existing bridge, due to on-site fuel use for construction engines and the production and delivery of construction materials.

Noise and Vibration

Construction activities, including operation of construction equipment and vehicles traveling to and from the construction site, would result in noise and vibration. Noise and vibration levels at a given location are dependent on the kind and number of pieces of construction equipment being operated, as well as the distance of the location in question from the construction site. At this time, the potential for noise and vibration impacts can be evaluated in a qualitative manner based on preliminary design information.

Noise

The noise levels that would be generated by construction of the Project were estimated following the general noise assessment methodology set forth in the U.S. Department of Transportation, Federal Transit Administration's (FTA) guidance manual, *Transit Noise and Vibration Impact Assessment*, FTA-VA-90-1003-06 (May 2006), which is the methodology used by the FTA and Federal Railroad Administration (FRA) in evaluating the noise of rail projects. (For more information on the FTA guidance manual, see Chapter 4.4.17, "Noise.") This analysis procedure takes into account several factors—including the noise emissions generated by different types of construction equipment, the amount of time the equipment is in use, and the distance between the equipment and the affected receptor—to calculate construction period noise levels. Typical noise levels of construction equipment that may be employed during the construction of the new rail bridge are provided in **Table 4.5-4**.

Noise from construction equipment is regulated by the U.S. Environmental Protection Agency's noise emission standards. These federal requirements mandate that: (1) certain classifications of construction equipment and motor vehicles meet specified noise emissions standards; and (2) construction materials be handled and transported in such a manner as not to create unnecessary noise. Measures required to meet these regulations will be implemented for the Project. In addition, appropriate low-noise emission level equipment will be used and operational procedures implemented. Compliance with noise control measures will be ensured by including them in the contract documents as material specifications and by directives to the construction contractor. Further, the contractor will be encouraged to use noise-limited construction equipment.

In general, noise caused by construction activities would vary in volume, duration, and location, depending on the task being undertaken and the piece of equipment used. Noise caused by delivery trucks, employees traveling to and from the site, and other construction vehicles would not be severe in volume or duration, and would be limited to the major access roadways leading to the Project site.

The FTA/FRA general noise assessment methodology involves consideration of the noise levels generated by the two noisiest pieces of construction equipment operating during the same time period, which are combined logarithmically to represent worst-case construction period noise levels. These worst-case levels are then compared to the FTA/FRA construction noise impact criteria shown in **Table 4.5-5**.

Table 4.5-4
Typical Noise Emission Levels for
Construction Equipment

Equipment	Typical Noise Level (dBA) 50 feet from source
Air compressor	81
Backhoe	80
Bulldozer	85
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Derrick	88
Crane, Mobile	83
Generator	81
Grader	85
Impact Wrench	85
Jackhammer	88
Loader	85
Paver	89
Pile Drilling Rig	85 ¹
Pneumatic Tool	85
Pump	76
Rail Saw	90
Rock Drill	98
Roller	74
Saw	76
Scarifier	83
Scraper	89
Shovel	82
Spike Driver	77
Tie Cutter	84
Tie Handler	80
Tie Inserter	85
Truck	88
Notes: ¹ Based on vendor information. Source: FTA, <i>Transit Noise and Vibration Impact Assessment</i> , FTA-VA-90-1003-06, May 2006.	

Table 4.5-5
FTA/FRA Impact Criteria for
Airborne Construction Noise (in dBA)

Land Use	Descriptor	Day	Night
Residential	L _{eq(1)}	90	80
Commercial	L _{eq(1)}	100	100
Industrial	L _{eq(1)}	100	100
Source: FTA, <i>Transit Noise and Vibration Impact Assessment</i> , FTA-VA-90-1003-06, May 2006.			

To provide a conservative analysis of potential noise impacts during construction of the Project, noise levels were calculated for the noisiest construction activity anticipated—pile drilling activities. As discussed earlier, pile drilling would occur for only a short time (anticipated two months on each side of the gorge), but this activity was used to evaluate the Project's worst-case construction noise levels. For analysis purposes, it was assumed that two pile drilling rigs would be operating simultaneously at the east or west side of the gorge (operation on the east side was evaluated for the park receptor site and the residences on Portageville Road, because it is closer to these locations, and operation on the west side was evaluated for the receptor site at the Glen Iris Inn, because it is closer to this location). Worst-case construction period noise levels were calculated for the noise receptor locations shown in **Figure 4.4.17-1** in Chapter 4.4.17, "Noise" (the same receptors analyzed for the operation of the new rail bridge), using the methodology described above. As shown in **Table 4.5-6**, worst-case construction period noise levels are below the FTA/FRA thresholds for impact at all receptor locations.

Table 4.5-6
Worst-Case Construction Noise Levels
During Pile Drilling Activities

Receptor Site	Equipment	Sound Exposure Level (dBA) ¹	Usage Factor ²	Distance from Project Site (Ft)	Resulting Noise Level (dBA)	Impact Criterion (dBA) ³	Impact?
1 Letchworth State Park adjacent to bridge	Pile Drilling Rig (x2)	85	0.2	50	81.0	90	No
2 Residences at Portageville Rd	Pile Drilling Rig (x2)	85	0.2	926	55.7	90	No
3 Glen Iris Inn	Pile Drilling Rig (x2)	85	0.2	2,640	46.6	90	No
Notes: ¹ The sound exposure level is the amount of sound generated by project-related activities. ² The usage factor is the percentage of an hour during which the equipment operates at full power. ³ The impact criteria are used to evaluate the resulting noise level. No construction noise impact criterion is specified by FTA/FRA guidance for park uses, so the criterion for residential use was used.							

Construction activities for the Project would result in short-term noise increases in the vicinity of the work site, including Letchworth State Park and residences along Portageville Road, for the duration of the construction. Even during the noisiest activities anticipated, these noise levels are predicted to be below the impact threshold levels according to the FTA/FRA methodology. The noisiest construction activities, pile drilling, may be audible for up to a mile from the construction site. Controlled blasting activities, anticipated to occur once or twice per week and for a very short time period (less than a minute per blast) may be audible for up to ½ mile from the site. Other construction equipment, like dump trucks, could be audible for ¼ mile from the site, and when multiple pieces of equipment are operating simultaneously, this would be audible for greater distances.

Vibration

Vibration resulting from construction activities can result in annoyance and, if at high enough levels, can cause architectural damage (such as cracked plaster) or structural damage. Given the proximity of the Project site to the existing Portageville Bridge, which already requires ongoing monitoring because of its condition, vibration effects would be carefully controlled during construction. The vibration effects from blasting vary widely depending on the amount and type

of explosive used. To limit the vibration effects of blasting, “close-in blasting” techniques would be used, which involves using smaller explosive charges in smaller blast holes spaced closely together. This results in a more even distribution of explosive charges within the rock mass, minimizing blasting effects.

Table 4.5-7 shows the typical vibration levels from construction equipment, measured 25 feet from the construction site.

Table 4.5-7
Vibration Source Levels for Construction Equipment
at a Distance of 25 Feet

Equipment	Peak Particle Velocity (inches/second)	Vibration Level (VdB)*
Pile Driver (impact)	0.644	104
Pile Driver (sonic)	0.170	93
Clam Shovel drop (slurry wall)	0.202	94
Hydromill (slurry wall in soil)	0.008	66
Hydromill (slurry wall in rock)	0.017	75
Vibratory Roller	0.210	94
Hoe Ram	0.089	87
Large bulldozer	0.089	87
Caisson drilling	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58
Note: * Vibration levels based on root mean square velocity levels expressed in VdB re 1 micro-inch/second. Source: FTA, <i>Transit Noise and Vibration Impact Assessment</i> , FTA-VA-90-1003-06, May 2006.		

The impact thresholds provided in the FTA manual for evaluation of vibration are related to the potential for damage to occur at nearby buildings as a result of construction-related vibration. **Table 4.5-8** illustrates the level of vibration that may cause damage to a building, when it occurs at the location of that building. As can be seen by comparing the information in **Table 4.5-7** and **Table 4.5-8**, pile driving has the greatest potential to result in architectural damage to most building types. For the Project, piles will be drilled rather than driven. An analysis of the potential vibration impacts associated with pile driving was conducted to reflect conservative (worst-case) conditions. Most other construction activities require very small (i.e., less than 25 feet) distances between the structure and the construction equipment or the presence of highly fragile buildings for impacts to occur. For fragile and highly fragile buildings respectively, the FTA guidance manual recommends a limit of peak particle velocities of 0.2 and 0.12 inches per second or 94 and 90 VdB.

Table 4.5-8
Construction Vibration Damage Criteria

Building Type	Peak Particle Velocity (inches/second)	Vibration Level (VdB)*
Reinforced-concrete, steel or timber (no plaster)	0.5	102
Engineered concrete and masonry (no plaster)	0.3	98
Non-engineered timber and masonry buildings	0.2	94
Buildings extremely susceptible to vibration damage	0.12	90
Note: * Vibration levels based on root mean square velocity levels expressed in VdB re 1 micro-inch/second. Source: FTA, <i>Transit Noise and Vibration Impact Assessment</i> , FTA-VA-90-1003-06, May 2006.		

Similar to noise, vibration decreases as the distance to the source increases. To determine the potential for construction activities from the Project to result in vibration levels that might damage the nearest structures, therefore, the level of vibration at those properties was calculated.

As noted above, the analysis considered the effect of pile driving, which is the construction activity with the greatest potential vibration effect. This analysis is conservative (worst case), because the foundation piles for the Project would be drilled rather than driven, resulting in less vibration. The vibration levels due to pile driving activities were adjusted for distance using the following formulas:

$$PPV_{\text{equip}} = PPV_{\text{ref}} \times (25/D)^{1.5}$$

where: PPV_{equip} is the peak particle velocity in in/sec of the equipment adjusted for distance

PPV_{ref} is the reference vibration level in in/sec at 25 feet from **Table 4.5-7**

D is the distance from the equipment to the receiver.

and

$$L_v = L_{\text{vref}} - 30 \times \log(D/25)$$

where: L_v is the vibration level in VdB adjusted for distance

L_{vref} is the reference vibration level in VdB at 25 feet from **Table 4.5-7**

D is the distance from the equipment to the receiver.

Conservatively assuming that the pile driving occurs on the portion of track closest to the houses along Portageville Road (which is not where piles are anticipated), the distance between the pile driving and the closest house would be 130 feet. At this distance, vibration levels from pile driving would be 0.05 inches per second (peak particle velocity) and 83 VdB (vibration level). These levels would be below the construction vibration damage criteria for even the most sensitive buildings as shown in **Table 4.5-8**. Consequently, no special protection would be required to protect the nearest structure from construction-related vibration impacts. Structures located farther away from the Project site would experience less vibration and also not require special protection from construction-related vibration.

Asbestos

Removal of the existing bridge and approach structures may encounter asbestos-containing materials (ACM). Existing applicable regulatory requirements, including those relating to testing, removal, agency notification and variances would be adhered to should ACM be discovered during construction.

Contaminated and Hazardous Materials

Lead-based paint and/or subsurface contaminated and hazardous materials (CHM) could be encountered during construction. To avoid the potential for impacts, all work would be conducted in accordance with existing, applicable regulatory requirements. Any subsurface work that involves the disturbance of soils would be conducted in accordance with a Project-specific Health and Safety Plan (HASP) and other applicable regulations and criteria to identify and manage any encountered or accidentally released CHM, such as releases of fuel or petroleum from on-site construction vehicles and equipment, to protect public health, worker safety, and the environment. The HASP will detail the health and safety procedures that will be implemented to minimize exposure of workers and the public to CHM. The Project site will be evaluated for CHM by considering potential subsurface contaminants of concern (e.g., releases from past operations), their chemical and physical characteristics, and the potential exposure associated with the work to be performed. The HASP will be developed in accordance with applicable Occupational Safety and Health Administration (OSHA) regulations and guidelines. The HASP and other plans as appropriate are expected to include: designation of appropriate personnel to ensure that all of its requirements are implemented, including required training; dust control and stockpiling procedures; contingency and emergency response plans; and agency notification requirements. These measures will avoid and minimize the potential for adverse impacts associated with contaminated materials.

4.5-4 SUMMARY OF MITIGATION

Because of the Project's location on a site surrounded by a park, construction activities would result in some disruption to the park that is unavoidable. Similar disruption would also occur to the nearest residences to the Project site, at the end of Portageville Road. Norfolk Southern will implement measures to mitigate impacts related to construction to the extent practicable. These measures include the following:

- Provision of an upgraded entrance booth at the Castile Entrance to provide greater capacity, to mitigate for the lack of access to the park through the Portageville Entrance.
- Use of control measures during blasting to minimize rockfall into the Genesee River.
- Use of drilled piles rather than driven piles to reduce noise and vibration.
- Use of erosion and sediment control measures.
- Use of turbidity curtains or other control measures to limit effects on water quality from removal of the in-river piers of the existing bridge.
- Filling of Wetland A in accordance with requirements of a permit from USACE.
- A tree planting and revegetation program developed in coordination with OPRHP and NYSDEC after issuance of the Record of Decision for the Project to mitigate for the habitat loss due to the removal of forested vegetation.
- Conducting tree clearing from October 31 to March 31 to avoid impacts to roosting habitat for the northern long-eared bat as well as the eastern small-footed bat.
- Coordination with USFWS to identify measures to be included in the Project to minimize the potential for adverse effects to bald eagles from Project construction. A permit is being sought from the USFWS in accordance with the federal Bald and Golden Eagle Protection Act. Measures to be included to minimize disturbance will include the use of drilled piles rather than driven piles; the use of small charges and blast mats during controlled blasting; and, in accordance with requirements set forth in the permit, additional measures such as limiting the noisiest activities (rock blasting and pile drilling) during particularly sensitive time periods for breeding bald eagles and development and implementation of a monitoring plan

to identify any signs of disturbance to nesting bald eagles during Project construction. If disturbance is observed, additional measures will be developed in consultation with USFWS.

- Coordination with the USFWS and NYSDEC regarding measures to minimize impacts to timber rattlesnakes during construction of the Project. These measures may include the use of construction “windows” limiting certain construction activities from periods of particular sensitivity for identified species nearby.
- Use of protection measures to limit encroachment into the remaining 0.06-acre wetland area during construction, including erosion and sediment control measures to protect the water quality of the wetland and exclusion fencing to keep machinery and foot traffic out of the wetland during construction. Following construction, disturbed areas will be restored with native plant species in coordination with OPRHP and NYSDEC.
- Development and implementation of a Construction Protection Plan that sets forth measures to protect historic park features outside the construction zone from accidental damage associated with construction activities.
- During construction, Norfolk Southern will salvage, to the extent feasible, stone from the walls along the portion of the Gorge Trail that will be relocated for the Project, for reuse along the relocated portion of the Gorge Trail. Norfolk Southern will also salvage a part of the base of Pier 11 of the Portageville Bridge to be conserved by OPRHP for display elsewhere in the park.
- Implementation of an Avoidance Plan to ensure that construction-related activity does not disturb archaeologically sensitive areas associated with the National Register-eligible Cascade House Historic Site, an archaeological site located outside the construction footprint.
- Use of staging area limitations on the area between Portageville Road and the existing railroad tracks to avoid potential effects to potential archaeological resources.
- Coordination between Norfolk Southern and OPRHP to provide signage on the Genesee Valley Greenway Trail to inform users of the status of trail closures or partial trail closure due to Project construction, including providing updates to such signage when subsequent phases of construction impact the trail.
- Coordination with OPRHP to develop measures to mitigate for construction-period visual effects, to the extent practicable.
- Implementation of a HASP to protect workers from possible CHM.
- Repair of Park Road and Portageville Road once construction is complete.

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